

PART ONE

1 - 3 Common Home Improvements

Construction Specifications for Garages
Kitchen Remodeling Requirements
Bathroom Remodeling Requirements
Fence Construction Requirements
Tool Shed Requirements
Vinyl Siding Installation Requirements
Room Addition Requirements
Requirements for Construction of Patio Deck
Waterproofing & Dampproofing Requirements
Furnace Installation Requirements
Furnace Trouble-Shooting Checklist
Hot Water Heater Installation Requirements
Portable Above Ground Swimming Pool Installation Requirements
Common Hazardous Electrical Conditions
Electrical Installation and Alteration Requirements
Exterior House Painting Specifications
Home Insulation Requirements
Types of Insulation
Public Sidewalk & Driveway Apron Requirements

Construction Specifications for Garages

A garage building shall conform to all items listed below and all other applicable Codes and City Ordinances.

Before construction of a garage can commence, a building permit must be obtained from the Building Department. When applying for a permit, a plot plan (sketched or architecturally rendered) specifying the property lines (width and length of lot,) the size of house structure, the measurement from the rear of the house to the rear property line, and where the proposed garage is to be built shall be submitted. The owner must show the size of the new garage, and show where the existing driveway is located. (See example of Plot Plan.)

If an old garage is to be torn down, a demolition permit is required.

NOTE: Pursuant to the Zoning Code, if an existing garage is torn down, the property owner will be required to reconstruct a garage with one (1) required parking space for each dwelling unit.

If the planned garage is to be built of masonry (brick or concrete block) and will contain no window openings, it can be built within six (6) inches of the rear and side property lines.

Garages constructed of wood may not be built within certain minimum dimensions from the rear and side property line. These minimum dimensions range from eighteen (18) inches to three (3) feet depending on the Zoning of the specific property. Contact the Building Department for side and rear lot line set backs.

No detached garage shall be built to a height greater than fifteen (15) feet above existing grade.

Garage floors shall be sloped to the overhead door unless a floor drain is installed.

Garages that shall be attached to the dwelling must have a "fire" separation between the garage and the dwelling.

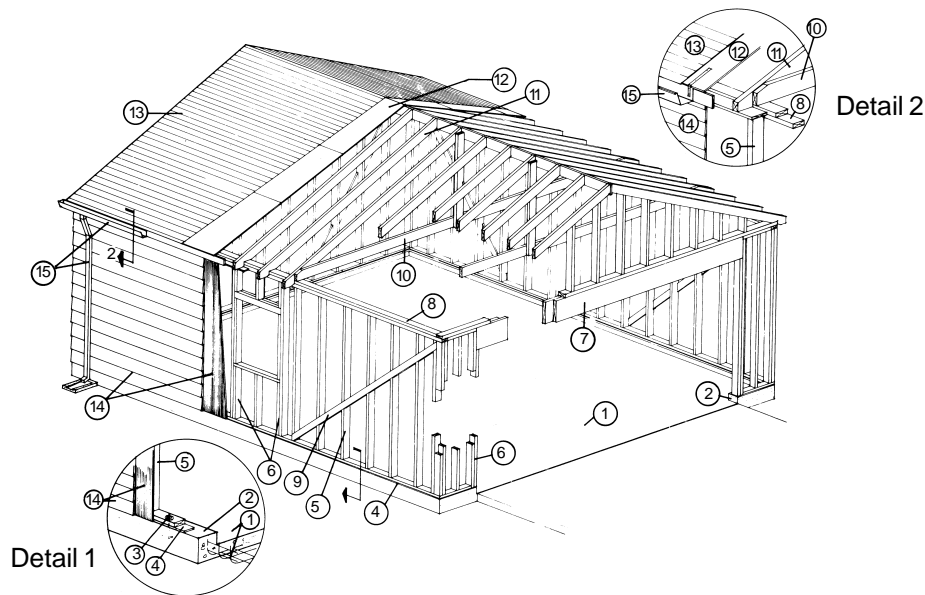
If a door is to be constructed between the living unit and the garage, the elevation of the garage floor must be at least four (4) inches lower than the sill of the door leading to the living unit. The door must be "fire rated" and equipped with a self-closing device.

Wind bracing shall be installed at all corners at a forty-five (45) degree angle. Bracing may be either notched into studding or may be surface-mounted on the interior side of the garage. It must extend into the top and bottom plates. Plywood sheathing is also accepted for wind bracing.

NOTE: Overhead garage door opener receptacles located in the ceiling area are not required to have ground fault protection.

Standard minimum size garages: The length of a garage shall not be less than twenty (20) feet. The width of a single garage shall not be less than ten (10) feet. The minimum width for a two car garage is eighteen (18) feet, four (4) inches. Regardless of the size of the rear yard area, property owners of a one or two family dwelling located in an R1 or R2 Zoning District are permitted to construct a 480 square foot garage.

Construction Specifications for Garages, continued



1. Garage floors shall be concrete with a minimum thickness of four (4) inches and shall be placed on undisturbed earth or compacted granular fill. Reinforcement in the form of wire mesh shall be placed and rolled into curbs prior to placement of concrete.
2. A curb eight (8) inches above finished grade and four (4) inches wide shall be formed and placed integrally with the floor slab. A concrete form inspection is required before placing concrete.
3. Anchor bolts (which secure the garage framing to the concrete curb) shall be placed twelve (12) inches from each corner and a maximum of eight (8) feet apart.
4. Before anchoring the bottom plate, one-half ($\frac{1}{2}$) inch thick bedding shall be applied to the curb top to assure a level condition and act as a vapor barrier.
5. Garage framing studs shall be spaced sixteen- (16) inches on-center, or a maximum of twenty-four (24) inches on center.
6. All openings shall have double studding (one full length stud and one jack stud).

7. Sixteen (16) foot long garage door headers shall be a minimum of two (2), two (2) by twelve (12) nailed together. Eight (8) foot long garage door headers shall be a minimum of two (2), two (2) by ten (10) nailed together. (Reversed gable garages shall have a one-quarter ($\frac{1}{4}$) inch steel flitch plate sandwiched between two (2), two (2) by twelve (12) for garage door headers).
8. Top wall plates may be one two (2) by four (4) provided rafters are placed directly over studs and shall lap at corners to tie walls together.
9. Wind bracing shall be installed at all corners at a forty-five (45) degree angle. Bracing may be either notched into studding or may be surface-mounted on the interior side of the garage. It must extend into the top and bottom plates. Solid four (4) foot by eight (8) foot sheeting one-half ($\frac{1}{2}$) inch thick minimum may be used for corner bracing.
10. Ceiling joists are sized according to the length of the span. Maximum spacing of ceiling joists shall be forty-eight (48) inches on center.
11. Roof rafters shall be spaced sixteen (16) inches on center or twenty-four (24) inches on center, maximum. If spaced twenty-four (24) inches on center with a single top plate they shall be placed directly over the wall studs. Collar ties at the ridge may be 2x4's with maximum spacing forty-eight (48) inches on center.

Construction Specifications for Garages, continued

12. Roof sheathing shall be a minimum 7/16-inch plywood and shall be an exterior grade type.

13. Roof covering may be asphalt or fiberglass shingles and may be installed directly over sheathing.

NOTE: Most common roof pitch for gable roofs is 3/12, 4/12, and 5/12. For hood type garages rolled roofing must be applied.

14. Primed hardboard siding, cedar lap siding, redwood siding or vinyl siding may be installed directly over wall studs without sheathing or felt paper, unless otherwise specified by the siding manufacturer.

15. Garages of all types shall have gutters and downspouts. Downspouts are not required to connect into a storm sewer; however, runoff water must be contained on owner's property.

Electrical wiring is not required by code for a detached garage; however, if electrical lights and receptacles are installed, a separate permit is required. All wiring shall be installed per the National Electrical Code. Ground fault protection is also required for all 120-volt receptacles not occupied or designated for stationary appliances.

NOTE: Overhead garage door opener receptacles located in the ceiling area are not required to have ground fault protection.

Standard minimum size garages: The length of a garage shall not be less than twenty (20) feet. The width of a single garage shall not be less than ten (10) feet. The minimum width for a two car garage is eighteen (18) feet, four (4) inches. Regardless of the size of the rear yard area, property owners of a one or two family dwelling located in an R1 or R2 Zoning District are permitted to construct a 480 square foot garage.

Water lines shall be Type K copper and must be at least thirty-six (36) inches deep to prevent freezing.

Electric feeders may be installed at different depths depending on the voltage of circuits and the wiring method used. Call the Building Department for specifics.

Gas lines shall be approved PVC (plastic) or galvanized steel at least eighteen (18) inches deep.

Kitchen Remodeling Requirements

Before remodeling a kitchen, permits must first be obtained from the Building Department.

When a kitchen addition is proposed, a plan and a drawing must also be presented when applying for the permit to determine zoning requirements.

Permits to be obtained are:

- √ Building - for carpentry work, cabinets, soffits, etc.
- √ Electrical - for new receptacles, lighting fixtures and electrical appliances
- √ Plumbing - for kitchen sinks, dishwashers and gas piping.
- √ When an existing kitchen is completely remodeled, the entire room is to be brought to current code standards.
- √ Remodeling is defined as replacing all wall and base cabinets.
- √ Before concealing wiring and plumbing, call the Building Department for an inspection.
- √ At least one (1) receptacle outlet shall be provided at each island or peninsula counter top with a long dimension of twenty four (24) inches or greater and a short dimension of twelve (12) inches or greater.
- √ Counter spaces wider than twelve (12) inches shall have a receptacle outlet. Counter spaces separated by sinks, refrigerator or range tops that shall be considered as separate counter tops and an outlet shall be installed on each side. Outlets shall be installed so that no point along the wall line is more than twenty-four (24) inches from an outlet.

√ It is recommended that the refrigerator and any other motor driven appliance be installed on separate twenty (20) ampere circuits.

√ All receptacles serving the counter top shall be G.F.C.I. protected.

Electrical:

√ At least two (2) 20-ampere branch circuits shall be installed for the counter top receptacles.

√ A third general-purpose circuit shall be installed to supply lighting.

NOTE: These are minimum Code requirements, additional circuits are beneficial and recommended.

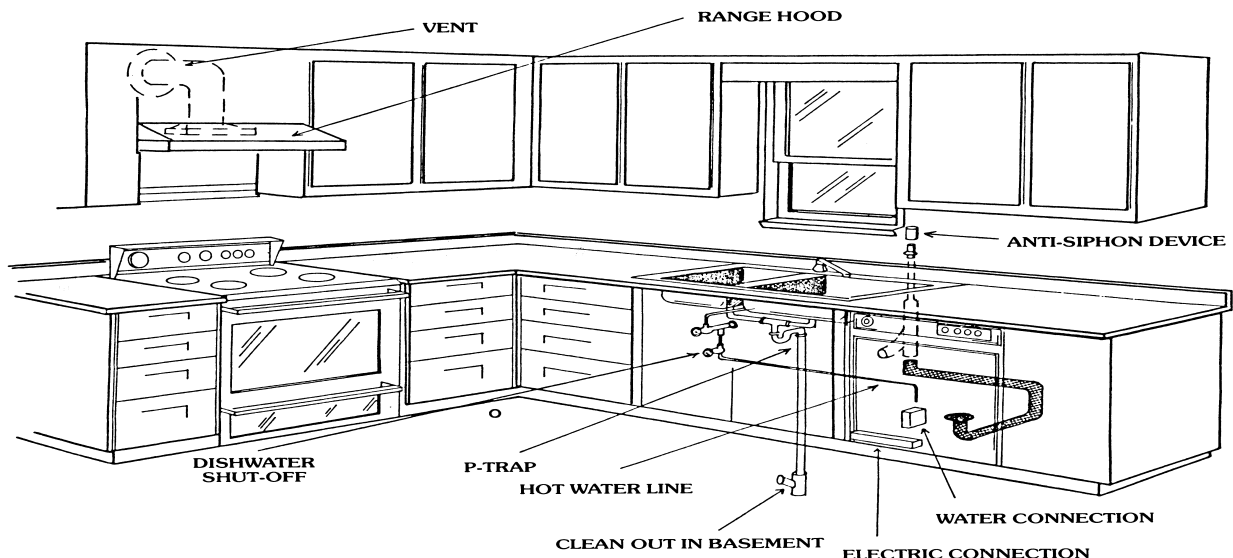
Plumbing:

√ The kitchen sink unvented waste line shall be two (2) inches in diameter (unless the developed length exceeds fifteen (15) feet, then the fixture must be vented) and may be of plastic (ABS or PVC Schedule 40).

√ The vertical waste, terminating in the basement, shall have a clean out at the base of its stack.

√ The trap located under the sink shall be a one and one-half (1½) inch "P"-trap.

√ If a dishwasher is installed, an "air gap" device shall be installed and located above the rim of the sink, unless the dishwasher has this device built in. The trap located under the sink shall be a one and one-half (1½) inch "P"-trap.



Bathroom Remodeling Requirements

Before remodeling a bathroom, permits must first be obtained from the Building Department.

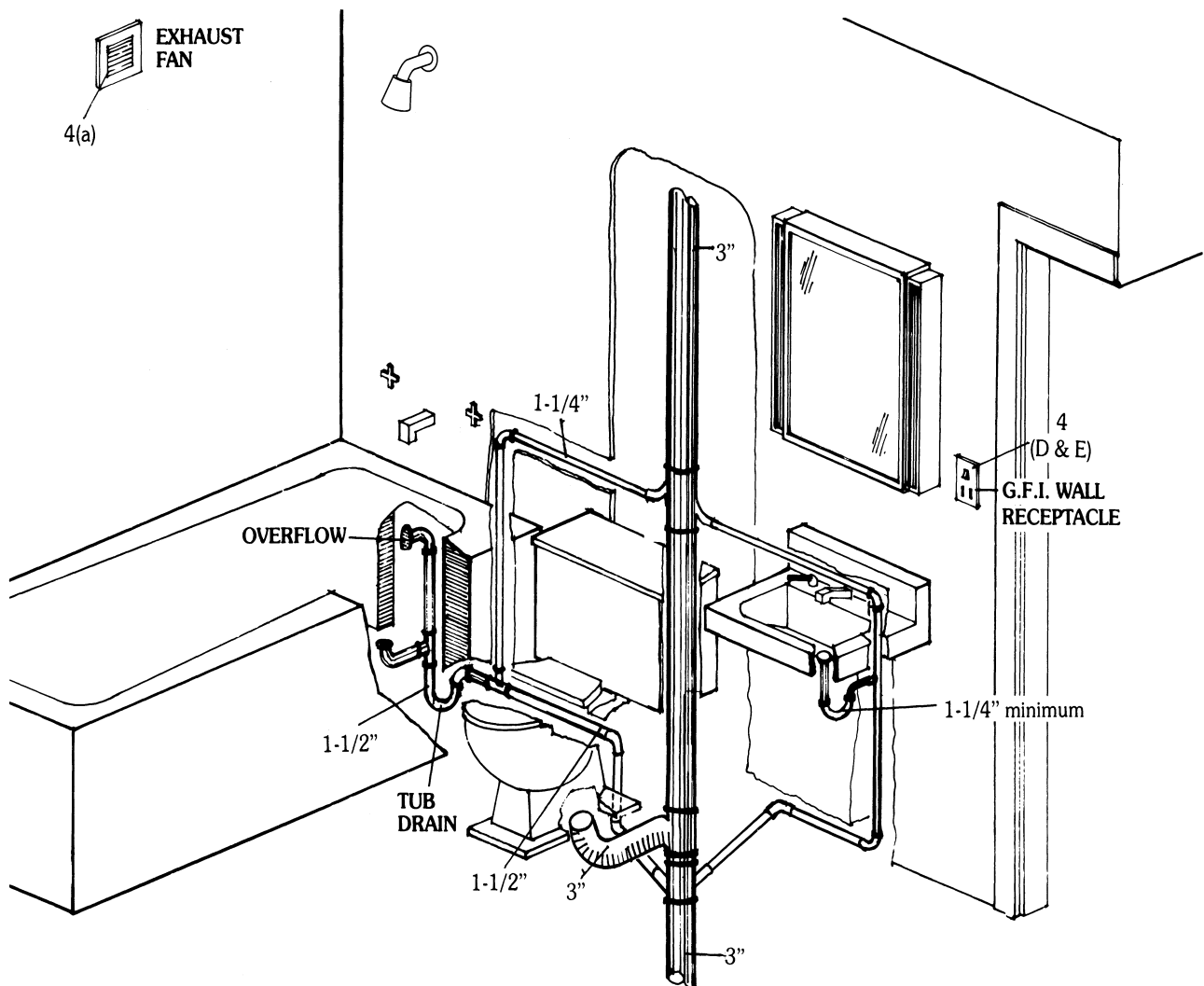
Permits to be obtained are:

Building - for carpentry, vanities, and soffits.

Electrical - for new receptacles, lighting fixtures and any electrical appliances.

Plumbing - for any replacement of plumbing lines or fixtures (tubs, lavs and toilets).

When an existing bathroom is remodeled, the entire room is to be brought up to current code standards. Remodeling is defined as replacing two (2) or more plumbing fixtures.



All sizes shown are minimum requirements.

Bathroom Remodeling Requirements, continued

Electrical:

If the existing bathroom does not have an operable window for ventilation, an electrical, exhaust fan shall be installed in the bathroom.

At least one (1) twenty (20) AMP branch circuit shall be provided. This circuit may supply receptacles, lights and exhaust fan if those total loads do not exceed eighty percent (80%) rating (16 AMP) of the circuit.

At least one (1) wall receptacle GFCI protected shall be installed in the bathroom adjacent to the basin location.

All bathroom receptacles shall have ground-fault circuit interrupter protection.

Before concealing wiring, call the Building Department for an inspection.

Plumbing:

Plumbing material may consist of plastic (ABS or PVC Schedule 40) or other approved materials for drain water and vent piping.

Correct waste sizes and vent sizes vary from job to job depending upon location of fixtures and location of bathroom in regard to what floor level the new plumbing is being installed.

See illustration for typical first or second floor bathroom with no plumbing fixtures installed above.

It is recommended that water supply line to the toilet and lavatory is equipped with shut-off valves readily accessible.

Before concealing plumbing, call the Building Department for inspection.

Fence Construction Requirements

1. Fences shall be erected and conform to all items listed below and all other applicable City Ordinances and Codes.

2. Before constructing any fence, a permit shall first be obtained from the Building Department. A permit for a living fence (hedges, shrubs, bushes, trees or plants) is not required. A diagram of the exact location of the proposed fence shall also be submitted to the Building Department at the time of application. This drawing will specify length and type of fence.



3. All fences must be installed entirely on owner's property and shall not be attached to the adjacent neighbor's garage.

4. Along a rear or side property line or portion of a rear or side property line, the following fences are permitted:

5. Fences, not in excess of six (6) feet in height as measured above the natural grade, may be of any style.



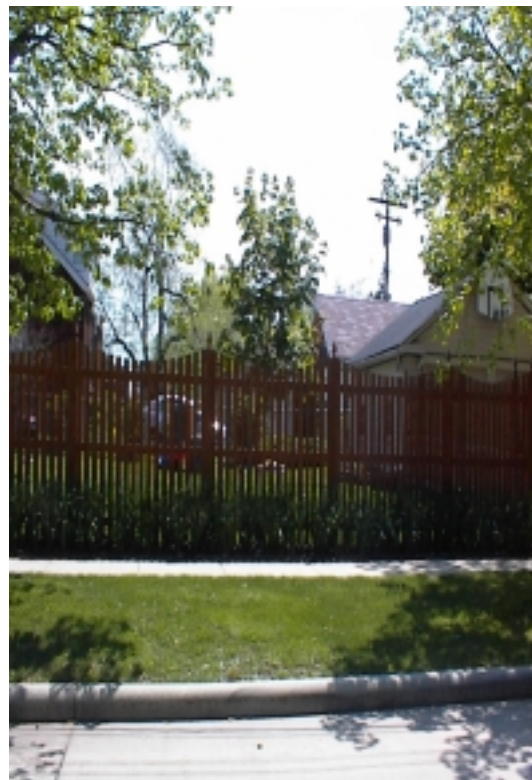
6. Fences in excess of six (6) feet in height, but less than eight (8) feet in height, must be constructed so that at least fifty (50) percent of each running foot of fence is open for through passage of light and air. Fences in excess of six (6) feet require a variance from the Board of Zoning Appeals.

7. No electrified fence shall be permitted.

8. Barbed wire fences are prohibited in residential areas.

9. The Zoning Code requires that the finished side of a fence faces the neighboring property.

10. Fences installed between residential and non-residential property but subject to the limitations of (1) and (2) above, may be permitted along the property line to the street line.



Fence Construction Requirements, continued

11. Such fences may not exceed eight (8) feet measured above natural grade and must be built so that:

12. At least fifty (50) percent of each running foot is open for through passage of light and air, and must be located at least a distance equal to its height from the nearest building.

13. No fence shall be erected or placed between the building line and the street line, and no living fence, designated in this area, shall exceed three (3) feet in height above grade.

14. A decorative fence may be permitted to be erected above the curb line between the building line and the street line provided:

15. Fence shall not exceed forty-two (42) inches in height. One pole not exceeding seven (7) feet in total height may be installed if used for illumination.

16. Total length of the fence shall not exceed fifty-five (55) percent of the foundation width of the structure.



17. No portion of the fence shall be situated further than eight (8) feet from any part of the structure excluding entry stairs and landing and provided further, that no portion of said fence shall be closer than ten (10) feet to the inside edge of the public sidewalk.

18. No gate shall be installed.

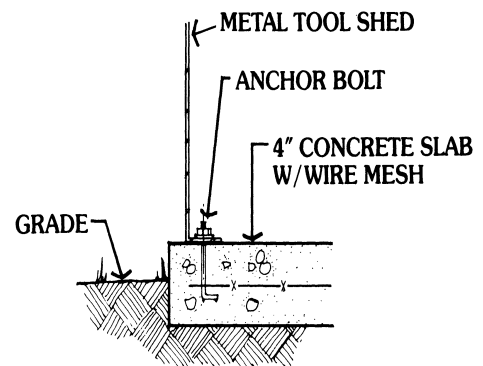
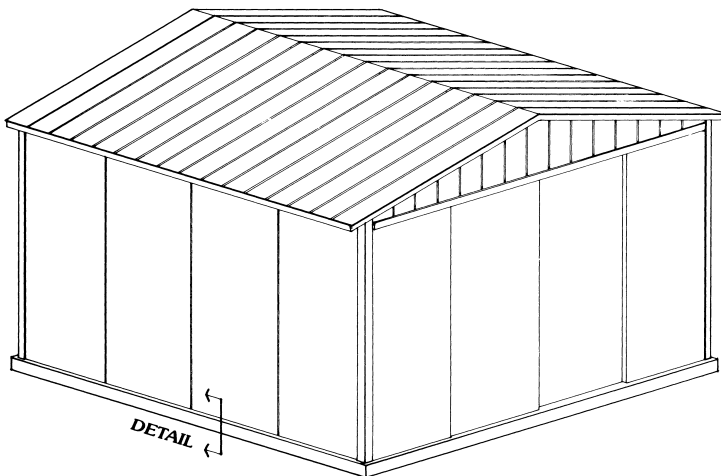
19. Only fences known as picket, slat, and split-rail shall be allowed and the location of said fence shall be subject to the approval of the Building Commissioner and the Chief of Police.

20. Any type of fence other than mentioned above must be approved by the Architectural Board of Review.

21. All fences shall be maintained in good condition so as not to become unsightly, unsafe, a nuisance or detrimental to the surrounding area.

Tool Shed Requirements

1. Tool shed installation must meet the following requirements and is subject to all other Zoning and Building Code requirements.
 2. Before erecting a tool shed structure, a permit must first be obtained from the Building Department.
 3. Upon making application for a permit, a drawing and a plot plan must be provided.
 4. The tool shed must meet all zoning regulations regarding location on rear property. The size of the shed, along with any other accessory structure, cannot cover more than twenty-five (25) percent of the rear yard area. A shed eighty (80) square feet or less in area is permitted regardless of the twenty-five (25) percent rear yard lot coverage.
 5. The tool shed shall be permanently fastened to a four (4) inch concrete slab with anchor bolts or other approved fasteners. If a concrete pad is not desired, the shed must be elevated eight (8) inches above ground level to prevent harborage of rodents.
 6. The concrete pad shall be reinforced with wire mesh.
 7. All untreated lumber shall be eight (8) inches above finish grade level.
 8. If the structure is of wood construction, framing studs shall be spaced on sixteen (16) or twenty-four (24) inch centers.
 9. Siding or an exterior plywood siding sheet may be installed directly over the framing studs, omitting sheathing or felt paper.
 10. Roofing may be of asphalt shingles or rolled roofing, over 1/2 inch exterior plywood. Roofing may also be of prefabricated corrugated metal or other approved material.
 11. Bedding is required under the bottom plate of a wooden structure.
 12. Complete metal prefab tool sheds are acceptable for this type of structure.
- NOTE: Must be anchored to a concrete pad.
13. Roof drainage (gutters) may be required depending on the slope of the roof, and, if so, downspouts must divert water onto owner's own property.
 14. Doors may be of wood or metal.



Vinyl Siding Installation Requirements

Before installing vinyl siding, a permit must first be obtained from the Building Department. The character of the house should be maintained if vinyl siding is used i.e., the vinyl should match the existing color. There is vinyl available to match shake single siding.

Although most homeowners will not be installing vinyl siding themselves, it is important to be aware of the following requirements:

The siding may be installed over furring strips.

Ends of siding butting wood trim (around doors and windows), shall have the proper vinyl trim applied to accept the siding.

Siding over heads of openings, such as windows and doors, shall have the proper vinyl trim applied to accept the siding.

Gutters shall not be less than .027 inches thick and shall be installed so as to properly dispose of water from roofs. When gutters are replaced and reinstalled, they are to be connected to a storm sewer or splashblocked (per dye test results, pending Engineering Department requirements). Gutters shall be assembled so as to prevent leakage.

NOTE: Due to energy conservation measures, more attention is being given to insulated siding. Factory laminated backer board and separate, drop-in backer panels are the two most popular being used, and they do have some "R" value. If the home is in need of insulation, it is recommended that blown-in insulation be installed prior to installing siding. When reflector foil is being used, it shall be perforated to allow passage of water vapor. The foil should be installed with the shiny side facing the air space. Foil is placed as close as possible to openings and around corners where air leaks are more likely to occur.



Room Addition Requirements

Before constructing a family room, kitchen addition, bedroom addition or any other addition, permits must first be obtained from the Building Department.

The property owner should have a good perspective as to how large the addition will be, method of construction and assembly, types of exterior finish and siding, types of windows and doors and general idea for location of closets and other interior partitions.

At the time of applying for a permit, a Building Department Official will require three (3) copies of drawings that may be professionally drawn or drawn by the homeowner. The drawings aid the property owner during the different stages of construction and are also reviewed by the Building Department for code compliance and minimum safe construction methods. The types of drawings required are:

Site plan or plot plan - The plot plan submitted for your home improvement project should show the following:

Location and dimensions of the lot lines.

Location and size of all existing and proposed structures including front, side, and rear setback dimensions, as well as structure dimensions.

Location and dimensions of the driveway.

The street address and name should be clearly indicated.

This diagram will indicate the size of the existing lot, length and width and will specify the size of the existing house and the size of the proposed addition. Any other structures on the lot should also be indicated on the site plan.

Elevation drawings - Elevation drawings are illustrations of the rear and sides of the proposed room addition.

They will indicate the sizes and location of windows and doors and specify the types of siding, roofing material and any other special trim.

Details - Detailed drawings will show the exact method of construction. They will show depths of footers, size and types of foundations, size of floor and ceiling joists and their spacing, type of wall construction, pitch of roof and sizes of roof rafters. They will detail thickness of sub and finished floors, thickness of walls and ceilings and specify finished ceiling heights.

Floor plans - Floor plans will indicate interior arrangements of partitions and specify measurement from wall to wall. These plans will locate doors, cabinets, electrical outlets and switches, plumbing, and heating equipment. Floor plans also reveal any interior modifications on the existing portion of the house that may need altering to gain entrance into this proposed addition.

All of the above drawings shall be drawn to scale. One-quarter ($\frac{1}{4}$) inch equals one (1) foot is suggested. Other information that is submitted with the drawings specifying special products and assemblies are called "specifications".

Permits to be obtained:

Building - For foundations, rough framing, cabinets, soffits, exterior and interior finish.

Electrical - For new receptacles, lights, and electrical appliances.

Plumbing - For sinks, water closets, lavatories, tubs, showers, dishwashers, gas piping and sewers.

Heating - For wall heaters or other heating equipment.

Room Addition Requirements, continued

Inspections - The person to whom a permit has been issued shall be responsible for requesting periodic inspections at each of the following stages of construction before covering or concealing work.

Footer inspection (after excavation and prior to placing concrete.)

Installation of footing drains, building drains and building sewers.

Completion of foundation and waterproofing.

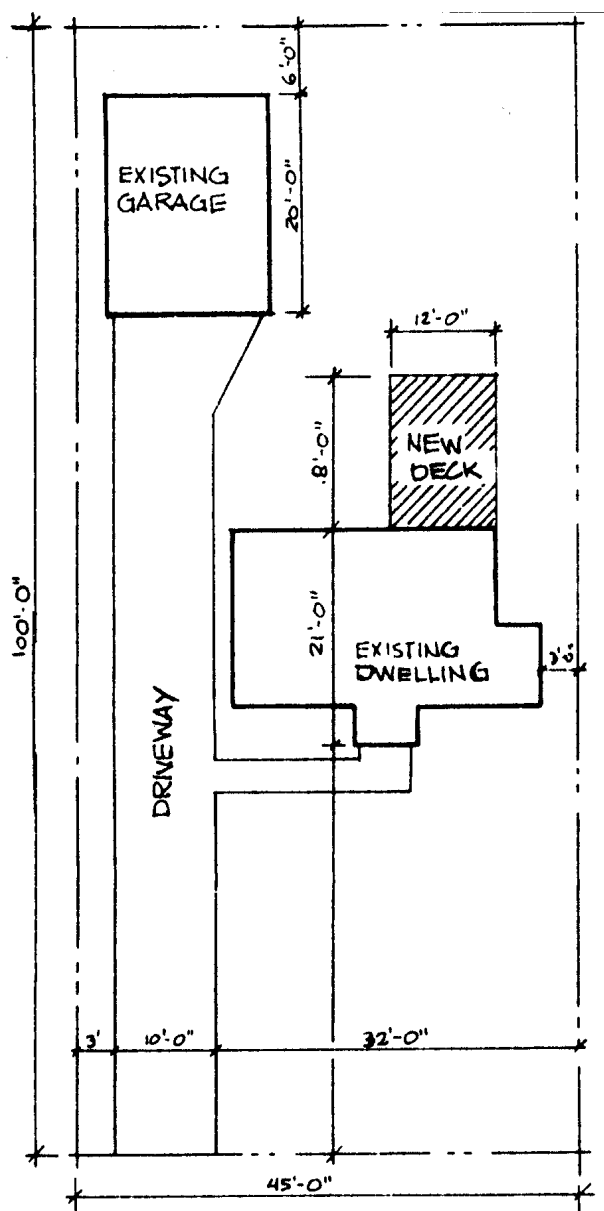
During the framing of the structure.

The completions of roughing in the plumbing, electrical wiring, gas piping, heating ducts or piping, or other similar service installations.

Before closing in all structural elements.

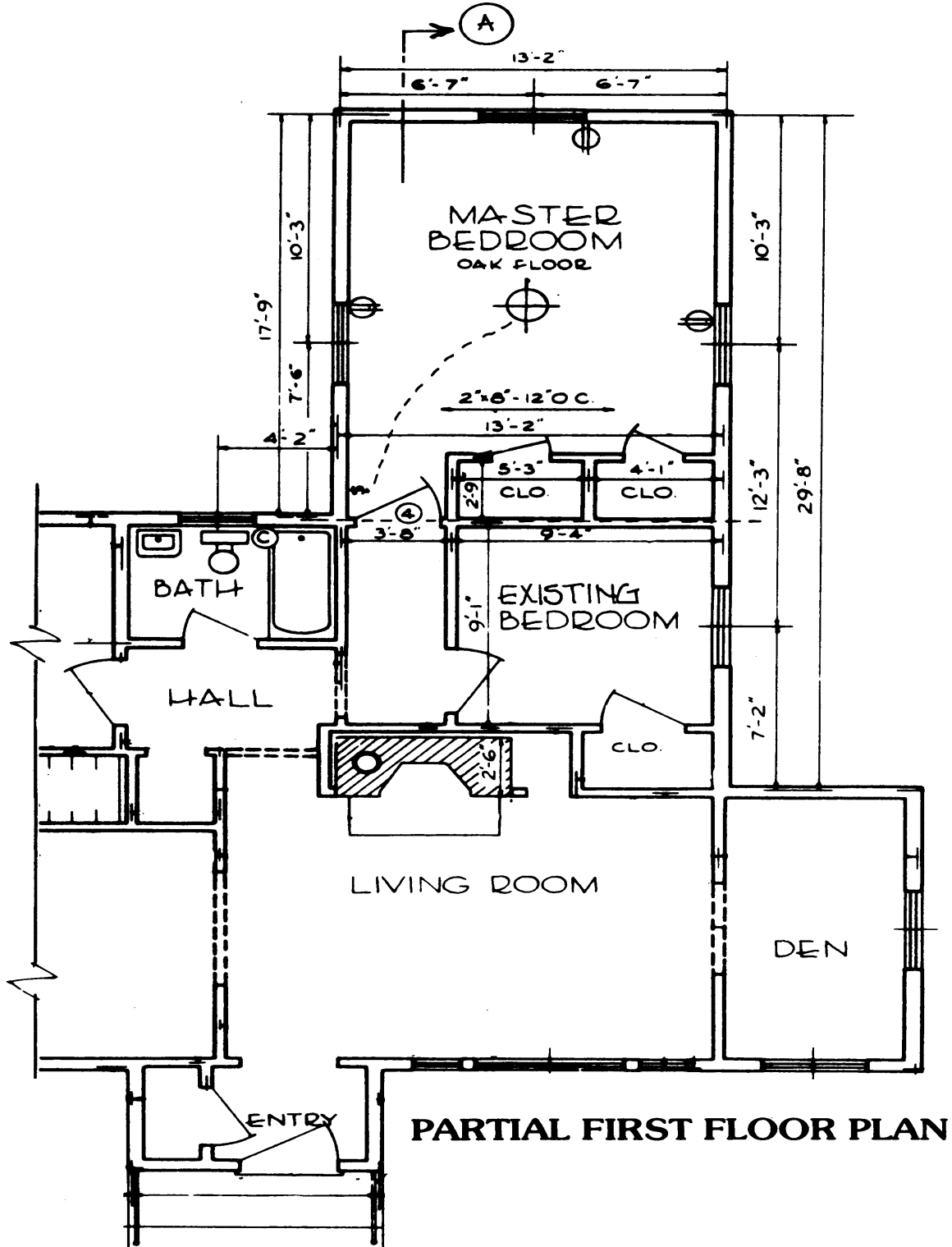
Upon the final completion of the structure.

Typical room addition foundations: - Most room additions will be constructed over a crawl space rather than excavating a complete cellar or basement. See detail drawing on Page 32. Foundation walls for crawl spaces shall be eight (8) inch masonry units or four (4) inch brick veneer with a four (4) inch masonry "back up" block. Footers supporting these walls are dug thirty-six (36) inches below grade. The width of these footings shall be sixteen (16) inches wide unless the foundation is trenched, in which case the width of the footing shall be not less than twelve (12) inches wide. Crawl spaces are a minimum height of eighteen (18) inches and thirty (30) inches when access for maintenance is required. All ground surfaces in the crawl space area shall be covered with plastic and at least two (2) inches of concrete to serve as a vapor barrier and prevent dampness from rising.



PLOT PLAN

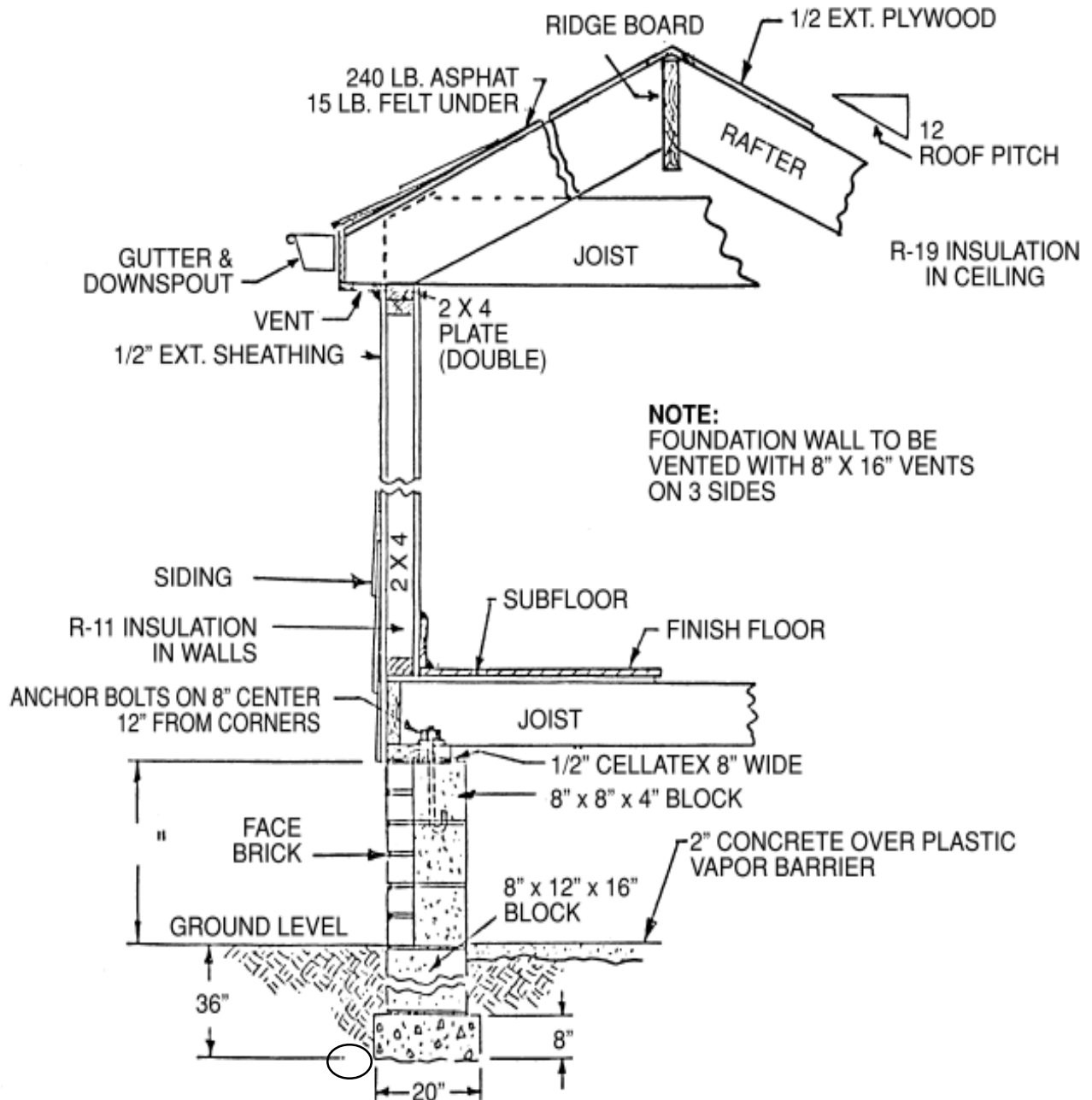
Room Addition Requirements, continued



PARTIAL FIRST FLOOR PLAN

Room Addition Requirements, continued

DETAIL SECTION EXAMPLE



Requirements for Construction of Patio Deck

Patio decks are becoming the most common improvement that the property owner themselves are attempting to encounter. Patio decks should be designed to accommodate the family needs and be constructed of lasting materials and be safe and sound.

Before constructing a patio deck, a building permit must first be obtained from the Building Department. At the time of application for the permit a plot plan, showing lot measurements, length and width of house, and the actual size of deck, including steps, must be submitted. A drawing, as illustrated on the opposite page, must also be provided which will show the method of construction for the proposed deck.

Lumber to be used may be pressure treated (treated against dry rot) or untreated structural lumber which then must be painted or stained to withstand the weather.

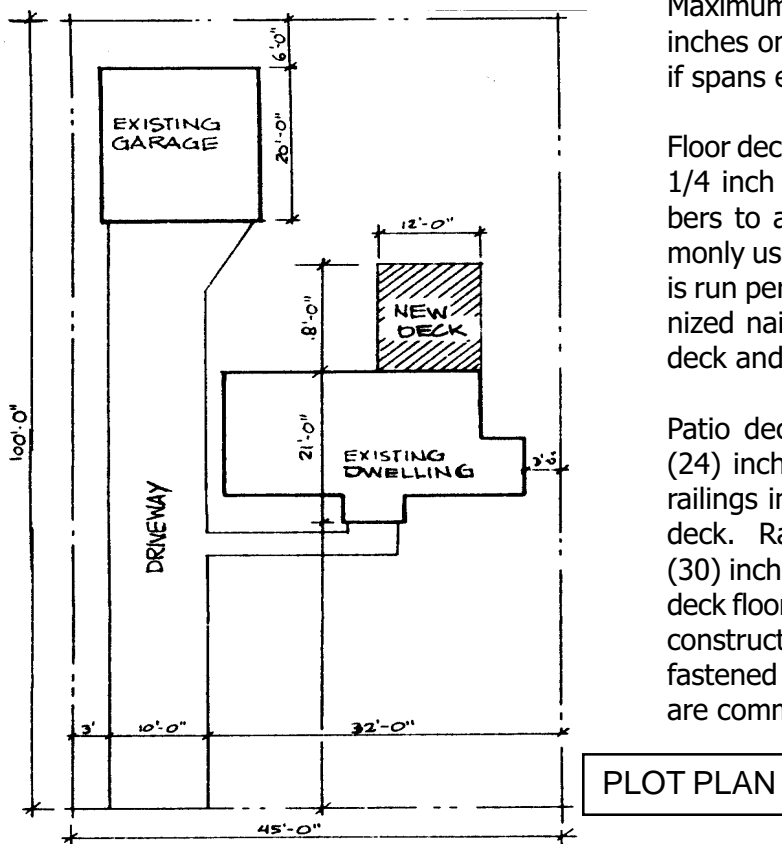
The majority of decks are elevated or raised above grade for easy entrance into the dwelling. The decks are supported on four (4) by four (4) posts, which are cemented in place. Posts shall extend thirty-six (36) inches below grade, and if the lumber is untreated, the portion below grade shall be treated with a preservative.

As illustrated, the property owner's drawing shall detail the method of anchoring the deck frame to the house as well as anchoring to the posts. The use of steel joist hangers is permitted and is the most common method used to attach the floor joist to the house.

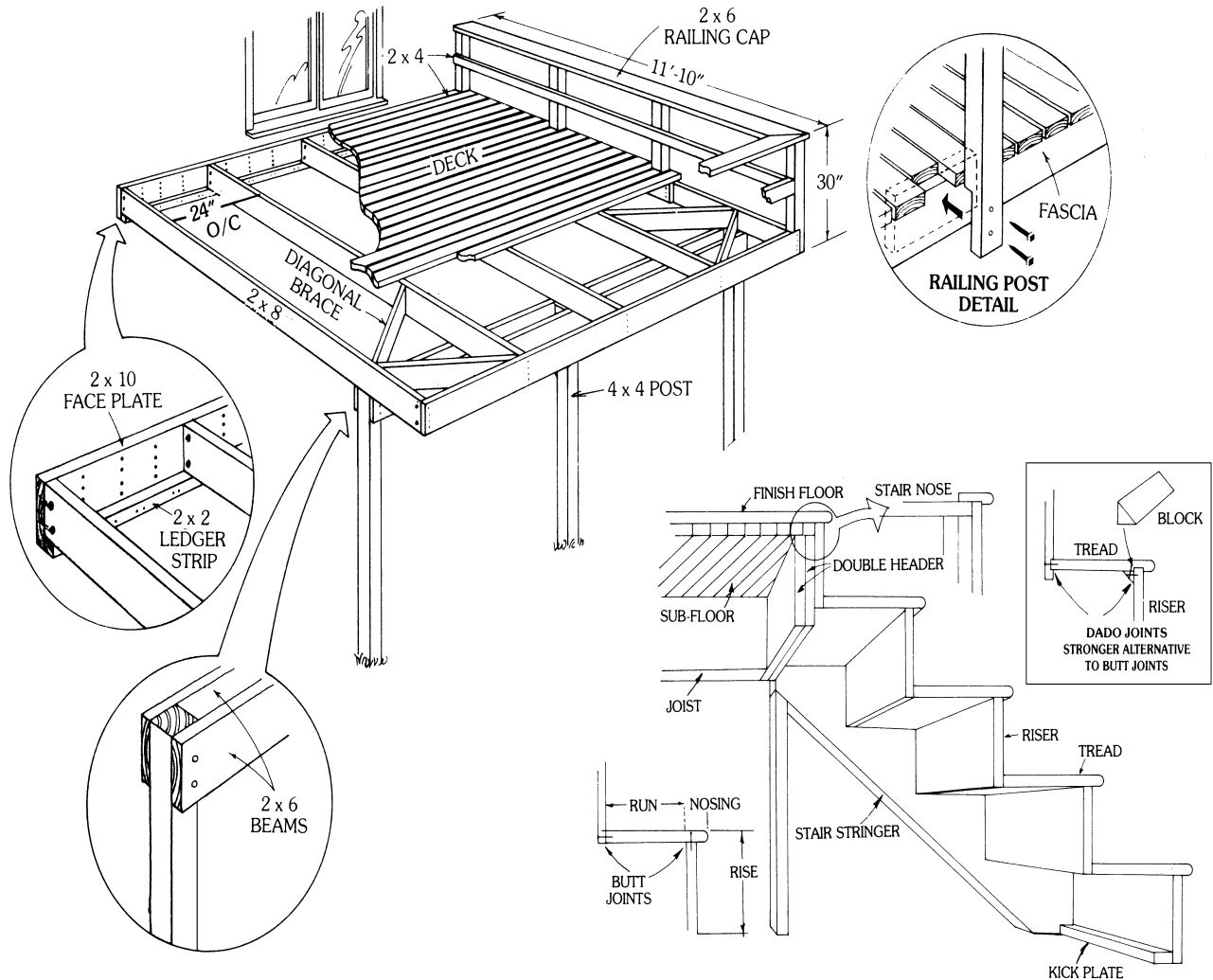
Floor joist shall be of sufficient size to carry the live load. For determining correct sizes of floor joist, refer to *Architectural Geographic Standards* available at the Lakewood Public Library or contact the Building Department. Maximum spacing for joists is twenty-four (24) inches on center. Center bridging is required if spans exceed fifteen (15) feet.

Floor decking for the patio should have at least 1/4 inch to 3/8 inch spacing between members to allow for drainage. The most commonly used flooring is 2x4's or 2x6's. Flooring is run perpendicular to the floor joists. Galvanized nails are recommended for nailing the deck and floor together.

Patio decks which are elevated twenty-four (24) inches or more above grade shall have railings installed around the perimeter of the deck. Railings are to extend between thirty (30) inches to thirty-six (36) inches above the deck flooring. Railings may be of 2x4's or 2x6's construction, and shall be rigid and securely fastened to the house. Corners for railings are commonly 4x4's.



Requirements for Construction of Patio Deck, continued



Steps for decks may be of the open or closed stringer type. Steps shall be at least as wide as the walkway leading to the deck. Risers shall all be equal and shall not be greater than eight (8) inches. Stair treads shall not be less than eleven (11) inches. All stair flights which have more than three (3) risers or which are twenty-four (24) inches above grade shall have at least one (1) durable handrail installed.

Unroofed patio decks 300 square feet or less in area, with a height not exceeding the existing first floor height and with thirty (30) feet between the rear property line and the rear of the deck are permitted and are not subject to lot coverage requirements.

Waterproofing and Dampproofing Requirements

Before excavating and performing water-proofing of exterior walls of a house, a building permit must first be obtained from the Building Department.

The object of dampproofing or waterproofing is to provide protection against water entering the exterior foundation wall.

After excavation of the foundation has been accomplished, broken or clogged drain tile shall be replaced.

The exposed wall shall be cleaned, scraped and holes remortared. An application of one-half (1/2) inch thick "Type M" mortar shall be spread over the entire wall from the outside edge of the footing to finish grade.

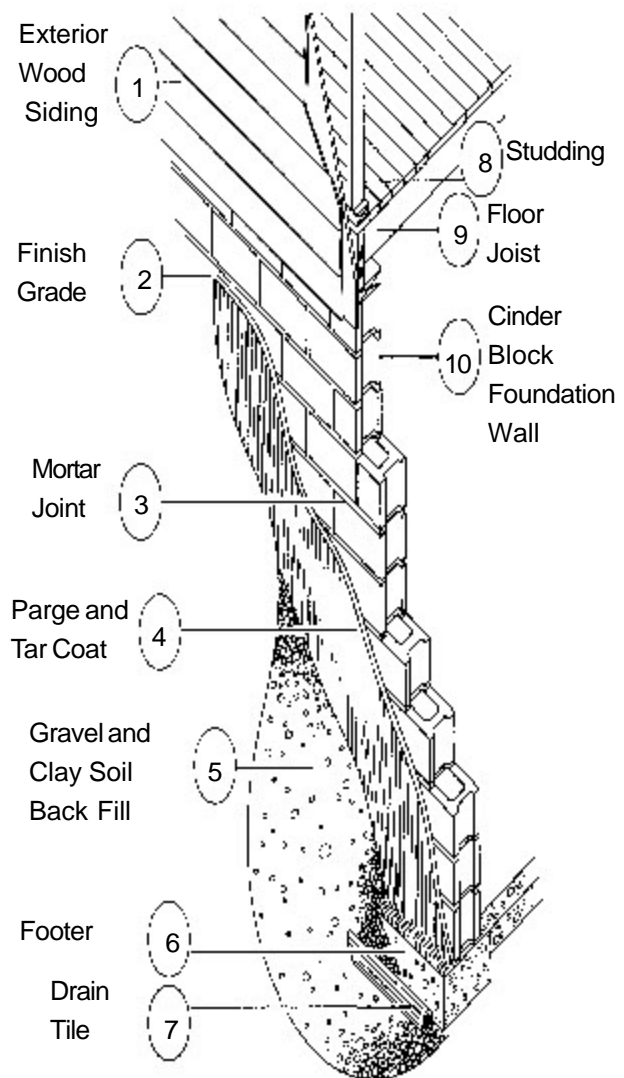
After the mortar application has been applied at least one (1) heavy coat of undiluted hot tar or hot asphalt shall be installed. Other acceptable coatings may also be permitted, such as ironite.

It is recommended that two (2) coats of this hot tar membrane be applied. Drain tile shall be not less than four (4) inches discharging into the building storm sewer. Slope of tile shall not be less than one-sixteenth (1/16) inch per foot. Down-spout drainage piping shall not be connected to footer drains.

The drain tile is covered with at least eight (8) inches of gravel but not closer than twelve (12) inches to the established surface grade. The top twelve (12) inches of backfill shall consist of impervious clay soil suitable for lawn or shrubs.

If the surface adjacent to the foundation wall is to be paved, the backfill shall be a suitable base for such construction.

NOTE: If water entry is visible on the basement floor or wall near the area of the exterior downspout, run a snake into the storm sewer riser at the point of the downspout entry to locate the approximate area where a clogged or broken pipe may be before excavating.

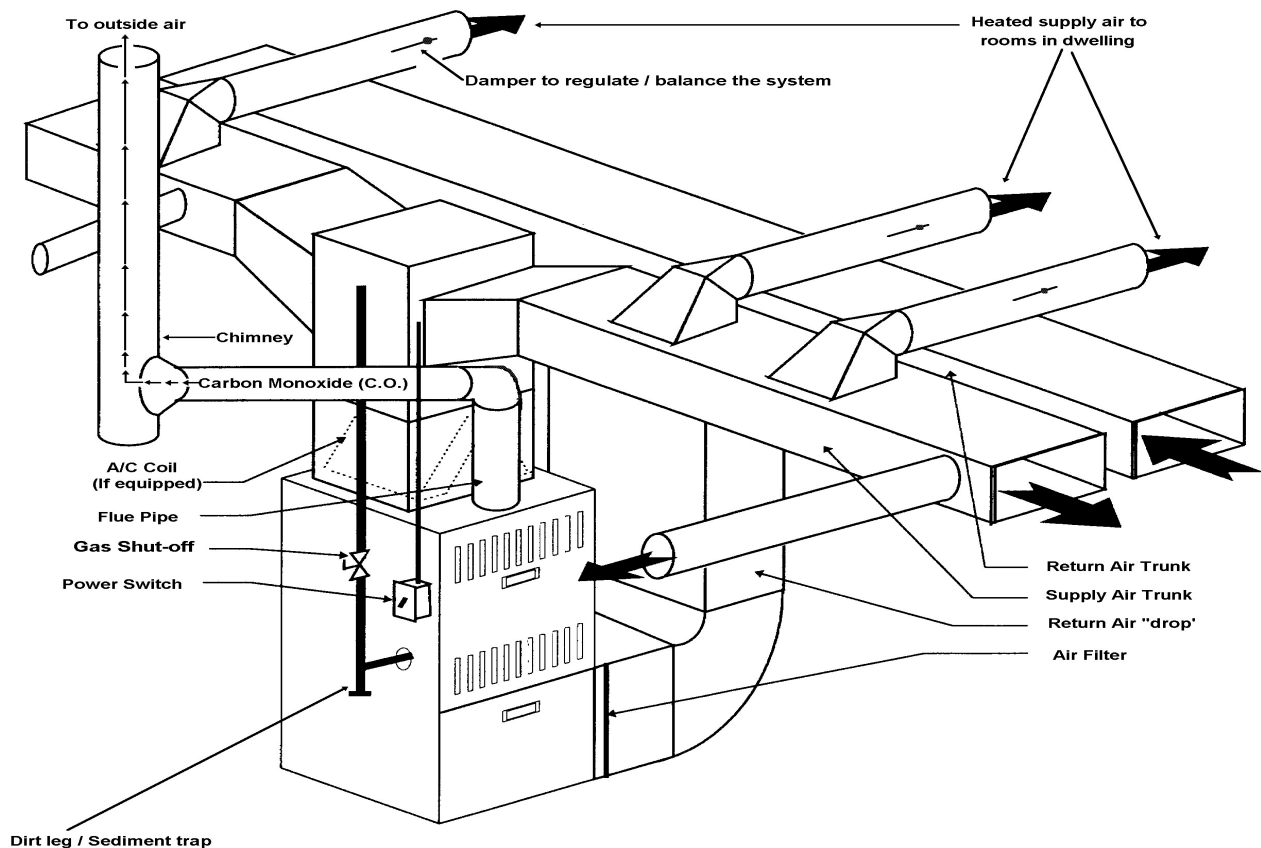


Furnace Installation Requirements

A heating contractor most often does installation of a new furnace in a home. Heating contractors are required to obtain a heating permit and be licensed by the City of Lakewood's Building Department. An inspection is made to check for proper installation and assure that the furnace meets minimum safety code standards. Property owners, however, should be aware of their furnace operation and be able to handle minor maintenance problems.

If the homeowner cannot easily find a furnace malfunction, a furnace repairman should be called immediately. The most commonly installed furnace replacement is a gas forced warm air furnace.

NOTE: Dirt, dust and lint are the most frequent causes for furnace breakdowns. Proper housekeeping will eliminate this problem along with changing air filters regularly. Filters should be replaced at least once a month. Furnace should be cleaned and vacuumed yearly.



Typical Forced Air Furnace

Furnace Installation Requirements, continued

FURNACE AND BOILER MAINTENANCE

- ◆ Install a carbon monoxide detector and a smoke detector in the basement. Follow the manufacturer's instructions.
- ◆ Having a qualified contractor do a "tune-up" regularly, preferably every year.
- ◆ A blue flame means the air/fuel mixture is correct.
- ◆ High-efficiency heating units create more condensation inside chimneys than older models. Watch for corrosive conditions in the chimney.
- ◆ Keep all items away from the boiler or furnace.
- ◆ Do not block the air flow around ducts, cold air returns, or radiators with furniture or piles of items.
- ◆ If the unit has a flue damper, make sure it is working properly.
- ◆ For furnaces, change the filters monthly. If there is central air conditioning, change filters during the summer months also. Forced air systems should also have the duct work in the entire house cleaned periodically.
- ◆ For boilers, bleed the radiators of trapped air each heating season, which will improve the heat output of the radiator.
- ◆ Have a qualified person, known as a "chimney sweep," inspect and clean or repair the chimney regularly. Even with a natural gas heating system, an inspection will ensure that the chimney is doing its job to vent hot, toxic gases and carbon monoxide to the outdoors.

For more information, contact the
Chimney Safety Institute of America
at 1-800-536-0118 or
<http://www.csia.org>

Furnace Trouble-Shooting Checklist

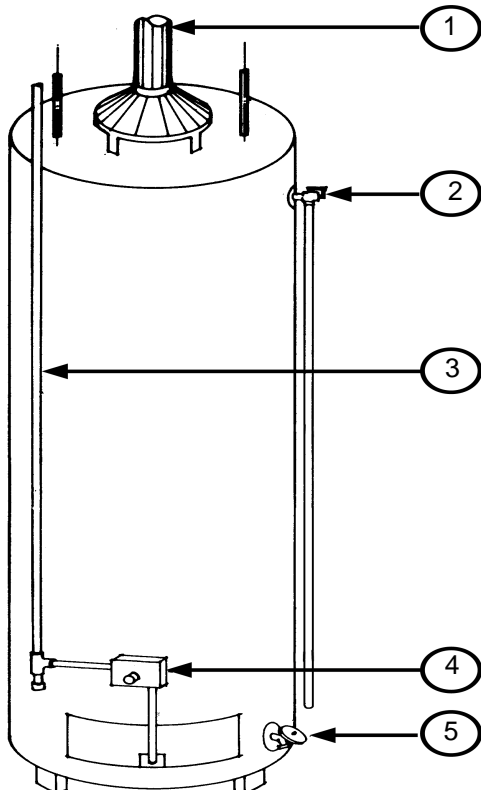
Listed below are the most frequent minor malfunctions and their possible causes.

PROBLEM	POSSIBLE CAUSE
Gas Smell	Caused by a gas leak, a loose connection or a break in the gas line. Immediate action - turn off gas valve service to the furnace. Call the Gas Company Immediately.
Blower won't run	Power has been shut off, or fan belt has broken. May also be fan control is set too low; if so, call for service.
Pilot flame goes out	Burner may be clogged or thermocouple failure.
Blower is noisy	Fan blades are loose or fan belt tension is improper; also fan motor bearing may need oiling. Oil once a year.
Blower won't stop	Dirty clogged air filter or clogged air filter or fan switch is defective.
Rapid burner cycling	Clogged or dirty filters, or poorly located thermostat location. May also be setting limit too low.
Burner will not light	Blown fuse, power failure or furnace switch may be in off position.
Combustion smell	SERIOUS CONDITION - May be a cracked heat exchanger or a cracked or leaky flue pipe or flue pipe is not properly sealed to chimney. Call the Gas Company Immediately.
Room temperature overshoots thermostat setting	Thermostat may be exposed to drafts or is located on a cold wall. Thermostat may also be defective.
Room temperature doesn't reach thermostat setting	Thermostat may be located too close to an accessory heating unit, such as a fireplace or stove. Also sun rays or TV heat may be affecting the thermostat; thermostat may also have loose terminals.
Pilot does not relight after several attempts	Not following instructions for relighting or gas supply not turned on and knob is not set in pilot position, defective thermocouple.
Delayed burner ignition	Burner may be clogged with dirt or a cracked heat exchanger.
Burner will not turn off	Defective or sticking automatic gas valve or thermostat is defective.

Hot Water Heater Installation Requirements

1. **FLUE** - Flues shall be full size from the gas appliance to the chimney. All flue pipe joints shall be gas tight and the flue pipe shall be sealed at the chimney. Metal flue piping shall not be lighter than twenty-six (26) ga. Aluminum flue piping commonly used to vent gas dryers is prohibited. Flue piping shall not be pitched downward. Dampers are prohibited in flue piping unless such devices are approved for the intended purpose.

2. **T&P VALVE** - These devices shall be manufacturer marked Z21.22 and shall be located on the side of the tank, or within three (3) inches of the top of the tank. The capacity of the t&p valve shall not be less than the B.T.U. input.



All temperature and relief valves shall be piped to a safe point of disposal and shall be of full size as that of the mouth of the relief valve. Run off pipe should be installed in continuous lengths within six (6) inches of the floor, and shall be metallic or *approved* plastic pipe.

3. **GAS PIPING** - All permanent gas appliances shall be installed with rigid black iron pipe. Gas shutoff valve shall be installed upstream of the union and within six (6) feet of the appliance. No bushings, soldered fitting, or cast iron fittings shall be used and no bends are permitted in rigid pipe. Where gas piping enters the pilot, a drip leg or condensation leg shall be installed.

4. **PILOT SHUTOFF** - All hot water tanks shall be equipped with an automatic pilot of the complete shutoff type.

5. **DRAIN SPIGOT** - All hot water tanks shall be equipped with a drain spigot.

GENERAL REQUIREMENTS FOR HOT WATER HEATER

Hot water heaters shall conform to all items listed above and all other applicable City Ordinances and Codes.

Before installing a hot water tank a plumbing permit shall first be obtained from the Building Department.

Portable Above Ground Swimming Pool Installation Requirements

DEFINITION: “**Portable family swimming pool**” - means a pool (with any horizontal measurement TEN (10) FEET OR MORE), resting entirely above ground and designed to be easily dismantled, stored and moved from one place to another.

Before construction begins on any portable family swimming pool, plans and specifications must be approved by the Health Department **PRIOR** to making an application for a swimming pool permit in the Building Department.

All portable family swimming pools shall comply with the following specifications and shall include the following plans and information:

- A. A copy of all the information provided by the manufacturer on all equipment to be used.
- B. A plot plan showing the pool in relation to buildings and lot lines - in feet.
- C. Side view showing the same information as in “B” - in feet.
- D. The pool equipment layout showing filters, pumps, chlorinators, hair and lint interceptors and their location and any other pertinent information.
- E. Liquid capacity of pool.
- F. The liquid capacity of any accessory, i.e.: wading pool, Jacuzzi, etc.
- G. The capacity in gallons per hour of the re-circulation system.
- H. Type of filters to be used.
- I. Type of disinfectant that will be used.
- J. How will disinfectant be applied to pool?
- K. Disinfectant testing equipment, type and range.
- L. The type, design and location of enclosing fences.
- M. A description and plan of lighting facilities.

After the above mentioned items have been approved by the Health Department, an application for a building permit can be made.

Building Permits Required

1. A fence permit shall be needed, if a required fence is to be installed. An electrical permit is also required for the installation of electrical receptacles and/or any lighting.

Location of family pools:

2. No family portable swimming pool shall be placed or located in any front or side yard. All pools shall be installed in the rear yard, and shall not be located closer than five (5) feet from the side or rear property lot lines.

NOTE: Any appeals needed regarding this requirement shall be referred to the Building Department

Fence requirements:

3. Every outdoor family pool shall be completely surrounded by an appropriate fence not less than four (4) feet in height. A building or existing wall four (4) feet or higher may be used as a part of such enclosure.

Gate requirements:

4. All gates or doors opening through such enclosure shall be of self-closing and self-latching construction and shall be designated to permit locking and shall be kept locked when the pool is not in actual use.

Electrical requirements:

5. At least one (1) electrical receptacle shall be installed a minimum of ten (10) feet from the pool, and such receptacle shall be protected by a ground fault circuit interrupter.

Portable Above Ground Swimming Pool Installation Requirements, continued

Location of overhead service wires:

6. No portable family swimming pool shall be placed under existing electrical service drop conductors or any other overhead wiring, unless such wires are located a minimum of eighteen (18) feet in height from the water level. Pools cannot be placed over underground electrical lines.

Access equipment:

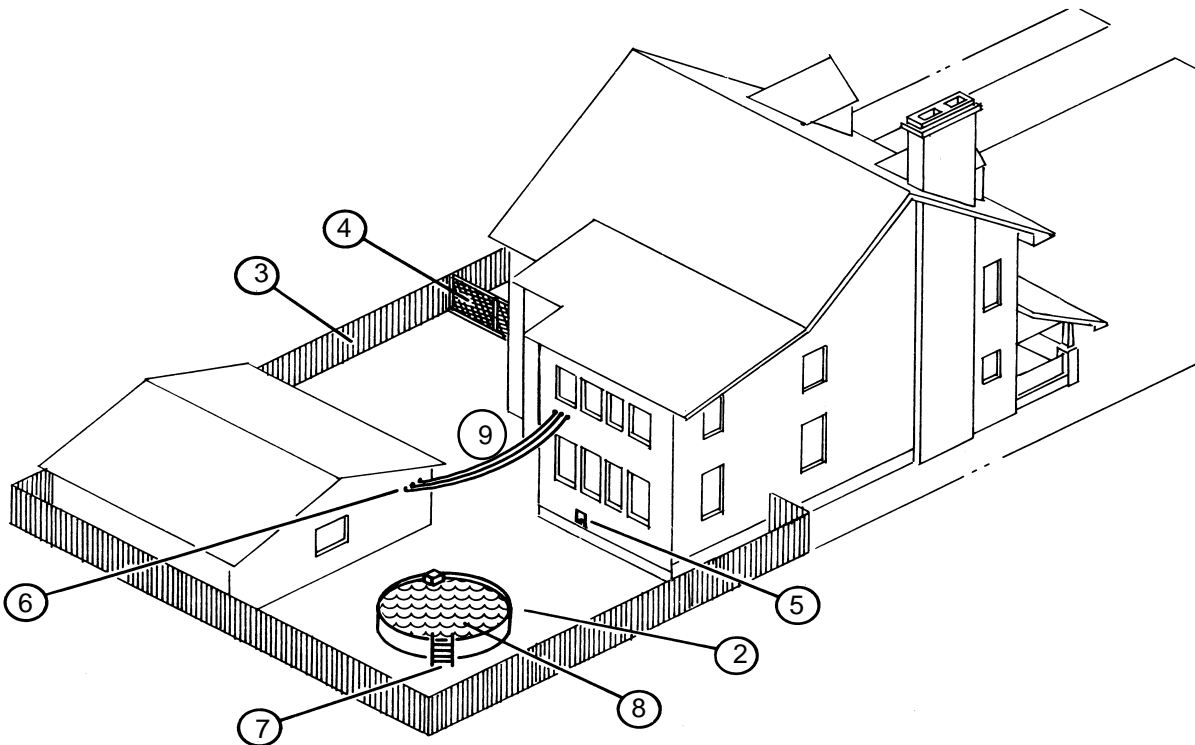
7. All access ladders and steps not permanently affixed shall be removed from the family swimming pools at the close of the swimming season.

Prohibited hours of use:

8. No person shall use or permit the use of a family swimming pool between the hours of 10:00 p.m. and 8:30 a.m.

Pool design and construction requirements:

9. All family swimming pools shall be constructed and maintained in a clean and sanitary condition. All lighting and wiring shall be in accordance with the National Electrical Code and all fixtures and equipment shall be "UL" or equivalent approved.



NOTE: Upon completion of installation of an above ground swimming pool, call the Building Department for a final inspection.

Common Hazardous Electrical Conditions

Listed are the most common hazardous electrical conditions which you, as property owners, should recognize and remedy for your protection as well as the occupants of the dwelling. One of the current leading causes of house fires is hazardous or deteriorated wiring.

Oversized fuses:

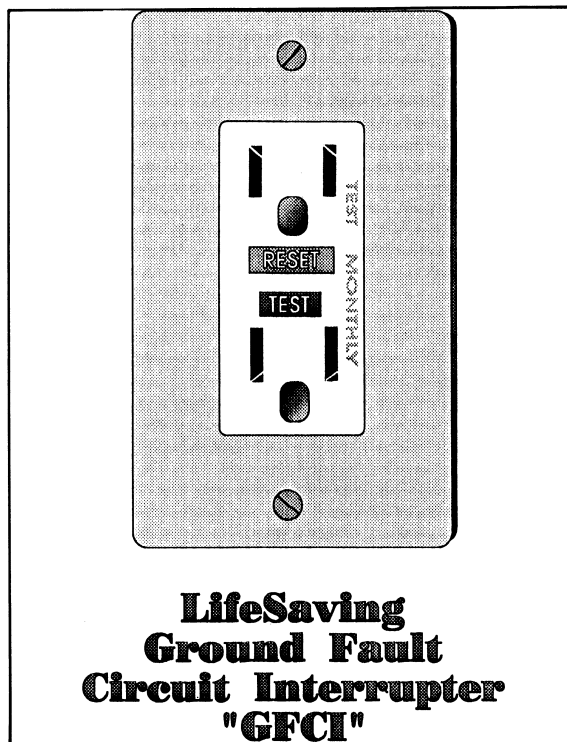
1. Most existing wiring is knob and tube. This wiring should not be fused more than fifteen (15) amps. Twelve (12) gauge wiring should not be fused more than 20 amps.

Improper electrical taps:

2. Improper taps are often found in the basement wiring. Additional lights and receptacles are added improperly to an existing knob and tube circuit. This often overloads the circuit and can cause a potential fire hazard. See diagram for the correct way to extend a knob and tube circuit which is not overloaded.

Installing unprotected non-metallic below the ceiling finish:

3. Non-metallic cable is not permitted to be run below the ceiling joist in the basement. Physical protection is required.



Doubling up of circuits:

4. Each breaker or fuse should protect only one (1) circuit.

Identification of circuits:

5. Fuse boxes should be properly identified so that a potential hazard can be quickly disconnected.

Extension cords:

6. Extension cords shall not be nailed to or on any surface. They should be able to be quickly unplugged if they become over-heated. They are for temporary use only.

Motor appliances:

7. These appliances, such as furnaces and refrigerators, should be on separate circuits.

Grounding receptacle plugs:

8. Grounding plugs should be effectively grounded. Plugs located near sinks should always be GFCI protected.

Hanging and bare wires:

9. Unsupported and frayed wiring should immediately be corrected or replaced. Frayed wiring many times indicates overloading.

Proper electrical service:

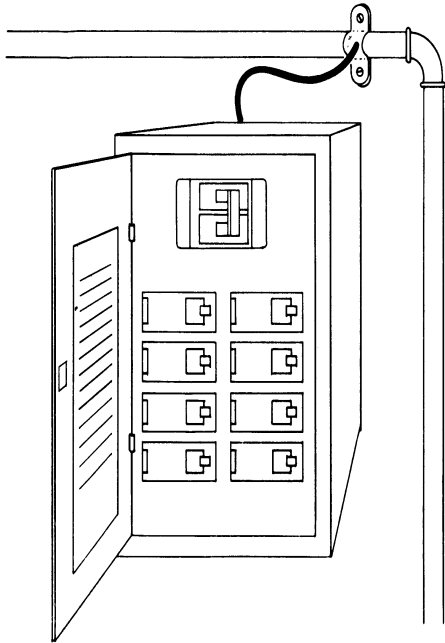
10. Most homes today, with the many electrical appliances and conveniences, should have at least 100 amp. service.

Receptacles:

11. Rooms with one (1) or two (2) receptacles should have more. This will eliminate excessive use of extension cords.

For further information regarding electrical hazards or electrical installations, contact the Building Department.

Electrical Installation and Alteration Requirements

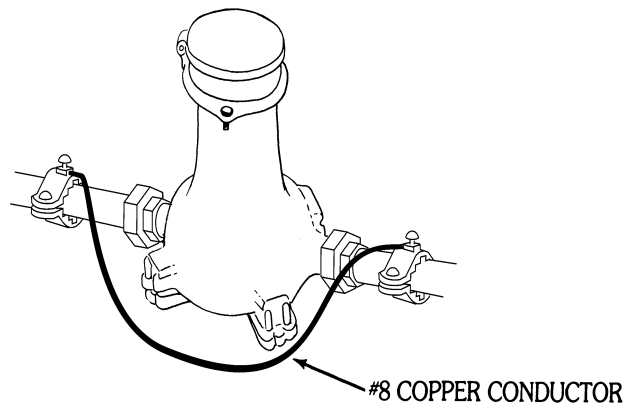


GROUNDING ELECTRODE CONNECTION

Before altering or installing new electrical equipment, an electrical permit must first be obtained from the Building Department. A licensed electrician must do electrical work, because of the potential hazards if not properly installed. The homeowner, if they are knowledgeable about wiring, may obtain the needed permit if he or she actually performs the work. The City of Lakewood has adopted the current edition of the *National Electric Code* as the minimum standards for wiring installations.

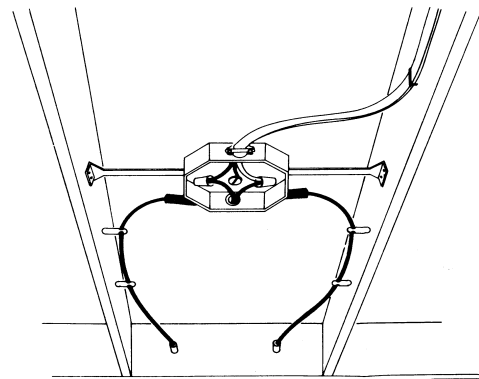
When an electrical permit is issued it shall be the responsibility of the permit holder to call for an inspection prior to concealing any wiring. Electrical installations shall meet all the requirements for that of new work.

Every electrical system should and shall be properly grounded and protected from any potential short circuits. As illustrated, electrical service panels shall have a grounding electrode conductor connected from the service-grounding bar to the metal cold water piping system.



BONDING OF WATER METER

The water meter shall also be bonded with a minimum #8 copper conductor from the supply side to the load side of the water meter. This will assure a completed grounding path in the electrical system.



CORRECTING AN IMPROPER ELECTRICAL TAP

Exterior House Painting Requirements

General Information

Whether planning to do it yourself or hiring a contractor, by ordinance paint may **not** be removed by using the following methods (unless you have pretested for lead content). You or your contractor may not high pressure wash, open flame burn or mechanical sand. Ground tarping is recommended, even when hand scraping to prevent soil contamination. Vents and windows should be closed and covered to prevent infiltration. Small children and pregnant women should avoid entering the work area until a thorough clean-up has been done. Personal protective equipment should be used by the worker as well. Remember dust from lead based paint caused by home renovation, inside or out, can contaminate your home and poison your children, resulting in permanent learning and behavior problems.

Concerned about your child's lead level? All Lakewood children should be tested between six (6) months and six (6) years of age. For free testing and home evaluation please call the Lakewood Department of Human Services/Division of Health at (216) 529-7690 for an appointment.

Exterior house painting and painting of appurtenant structures does not require a building permit. Homeowners who hire a contractor must be made aware that painting contractors must be registered with the City of Lakewood's Building Department before they commence this type of work. This assures the homeowner that they carry current liability and property damage insurance in case of an accident.

Exterior Painting Specifications

This painting section is to inform Lakewood residents who may be painting themselves or having a contractor paint their home of proper preparation and application for painting. A paint job done with good quality, modern day house paint should last for at least five (5) years. The fact that many paint jobs fail sooner is usually not the fault of the paint, but of the painter who does not take the time to properly prepare the surface. The following specifications, if followed, will assure the resident of a high quality and lasting paint job.

All general repairs should be completed before any attempt is made to paint.

All rotted, decayed or badly cracked siding and trim should be replaced. Leaving this condition will allow water to seep through the crack causing the paint film to blister and peel. Replacement material shall closely match existing.

Renail all loose siding.

Siding should be renailed where loose to prevent water from entering between lap joints. All rusty nail heads shall be set one-eighth (1/8) inch deep and puttied. All nail holes and small cracks in surface shall also be filled with putty.

Caulking and filling.

Remove all sections of broken and rotted caulk from around windows and door casings and install new fresh caulk and apply primer to these areas.

Window and door glass reglazing.

Scrape all loose and flaking putty from window sashes and install new glazing and prime it with an oil primer.

Scrape or wire brush all loose, blistering and peeling paint.

These areas scraped should be taken down to bare wood.

All rough edges should be hand sanded so as to be closely feathered

Spot prime all bare wood areas.

Remove all dirt, grime and grease accumulation.

Exterior House Painting Requirements, continued

PAINTING TIPS:

Start painting from top downward to avoid drips and spatters.
Paint from side to side.
Be generous with paint.
Complete painting of a course of siding, if interrupted, to avoid lap marks.
For new work — apply three (3) coats — one (1) primer and two (2) finish coats.

All protected areas such as overhang eaves, gables and porch ceilings should be washed and rinsed to insure good paint adhesion. Follow the paint manufacturer's recommendations for surface preparation.

Remove rust from all steel and iron metal surfaces.

After scraping these areas, apply metal rust inhibitive primer.

Provide proper protection of surrounding areas, such as shrubbery, drives and walkways prior to painting.

Application of paint is not recommended when temperature is below fifty (50) degrees Fahrenheit unless the manufacturer states otherwise.

Wait for morning dew to evaporate before starting to paint.

When painting in the summer, follow the sun around the house. This will allow you to paint the shaded side of the house during the peak periods of heat.

Paint application should consist of one (1) coat primer to all new surfaces and surfaces which have been previously scraped and cleaned and/or repaired.

All applications of finished paint, stains, or other coatings should be applied in strict accordance with the manufacturer's directions. Ready mixed paints should not be thinned, unless so stated in the application instructions.

All railings, posts, columns, soffits, fascias, lattice work, shutters, awnings, flooring, doors, windows, steps and any other wood or metal trim should receive at least one (1) coat of finish paint. Finish work should be uniform, smooth, and free from runs, and brush marks. Finish paint should also include the covering of top and bottom of door and window sash edges.

Paint designated for porch and floors should be of an exterior enamel type for a durable finish.

A second finish coat may be necessary if surface does not provide acceptable coverage or hiding. If the color of the house has been changed, two (2) coats will probably be needed.

Upon completion of the painting work, all tools, waste materials and containers should be removed from the site.

NOTE: Paint blistering is caused from excessive moisture. Make sure that the interior of your home is adequately ventilated, especially in the basement, attic, bathrooms and kitchen areas.

Home Insulation Requirements

Installing home insulation does not require a building permit; however, if a contractor is hired, he must be registered with the City of Lakewood's Building Department before performing this type of work.

Because most homes in our City were built when energy was cheap and abundant, the amount of insulation in your house may not be adequate to provide an energy efficient environment. The extent to which you insulate is a matter only you and your checkbook can determine. The initial investment will pay for itself in reducing heating and cooling bills. Proper location of installing insulation is of utmost importance.

Where to insulate:

1. In unfinished attic spaces insulate between the floor joists to seal off living spaces below. Do not install insulation between roof rafters in an unfinished attic.
2. In finished attic rooms with or without dormers, insulate . . .
 - (a) between the studs of "knee" walls,
 - (b) between the studs and rafters or exterior walls and,
 - (c) ceiling with cold spaces above.
3. All exterior walls including . . .
 - (a) walls between living spaces and unheated attached garages or storage areas,
 - (b) foundation walls above ground level and,
 - (c) foundation walls in heated basements.
4. Floors above cold spaces, such as vented crawl spaces and unheated attached garages. Also insulate . . .
 - (a) any portion of the floor in a room that is cantilevered beyond the exterior wall below and,
 - (b) slab floors built directly on the ground.
5. Insulate heat ducts running through unheated or uncooled areas. The major problem that can be associated with installing insulation is moisture control. To guard against moisture problems, use or install insulation which has a vapor barrier applied directly to the insulation and install additional air vents. Never cover or block vents with insulation.

Types of Insulation

Insulation is available in four (4) basic forms:

Blankets or Batts - These are fibers made into sheets for easy installation. Widths correspond to standard stud or joists spacing. Blankets are continuous rolls which can be hand cut to desired lengths. Batts are pre-cut to four (4) feet and eight (8) feet lengths.

Loose Fill - This is loose material that can be poured into place.

Blown Fill - These are loose fibers or plastic foams that are blown into finished areas with special machinery.

Rigid Insulation - These are plastic or fibers that are pressed into rigid boards.

The effectiveness of insulation is measured in terms of "R" values (the material's resistance to heat flow). The higher the "R" value, the more effective the insulation. No matter what kind of insulation you buy or have installed, check to be sure that the materials meet either Federal or American Society of Testing Materials (ASTM) or other recognized testing agency specifications. These approvals should be stamped on the material itself or on the package in which they are shipped.

If you install insulation yourself:

1. Be sure to install the insulation per the manufacturer's instructions.
2. Wear protective clothing, long sleeves, gloves and if need be, wear a face mask. Avoid prolonged contact with insulating materials.
3. Do not cover or handpack insulation around electrical fixtures, motors, or any other heat-producing device. This will eliminate possibility of fire and is also required by the Building Code.
4. Do not cover attic eaves or vents with insulation. Proper ventilation is a *must*.

Having it done professionally:

1. Obtain at least three (3) estimates and describe the job identically to each contractor so as to obtain comparable job costs.
2. State in the contract the type of insulation, thickness and the "R" values.
3. Check to see if the contractor is currently registered with the Building Department.
4. And, obtain in writing, a guarantee.

Requirements for Public Sidewalks, Curbs and Driveway Aprons

GENERAL INFORMATION

Sidewalks and driveway aprons are located on public property and, therefore, must be constructed according to common standards for the entire City. These standards are in conformance with the Ohio Department of Transportation Construction and Material Specifications, latest edition, the Ohio Basic Building Code, the American Concrete Institute and the Codified Ordinances of the City of Lakewood.

PERMITS AND BONDS

Before installing a new driveway apron or public sidewalk a permit must first be obtained from the Public Works Department at City Hall (216) 529-6800

AT LEAST TWO WORKING DAYS PRIOR TO THE START OF THE PROJECT.

This two-day period starts the next working day after the application form is completed. The permit charge is Ten Dollars (\$10.00) and is non-refundable. The bond cost is Forty Dollars (\$40.00) and is refundable upon receipt of an acceptable inspection report. Both charges are due when the permit is obtained.

QUALITY CONTROL AND INSPECTION

Quality control is the responsibility of the permit holder.

SIDEWALK INSPECTOR

Absolutely all concrete work shall be inspected both before and after the concrete is cast. The City Sidewalk Inspector shall be called (216) 529-6694 after the forms and reinforcing are in place before the concrete is cast. The Inspector shall also be called after the concrete is cast for the final inspection. A minimum of four (4) hours advanced notice is required for every inspection. The Inspector will be examining the dimensions of the pour, compliance with the specifications contained

herein, quality of the finish and conformance with surrounding grades.

The permit holder shall correct all deficiencies so noted at his or her expense.

ALL UNINSPECTED CONCRETE WORK IS SUBJECT TO IMMEDIATE REMOVAL AT THE PERMIT HOLDER'S EXPENSE.

The permit holder is required to adhere to these specifications and demonstrate to the City Inspector compliance. This shall be done by providing delivery tickets, mix designs from the supplier that demonstrate compliance and any other documentation that the specified requirements for every item herein has been met.

BACKFILL AND PLANTINGS

All excavated areas shall be backfilled and tamped/compacted to prevent settlement within fifteen (15) days of completion of concrete work. The permit holder is responsible for repairing any settlement for a full year following completion of the project. The two (2) inches of the backfill shall consist of a soil suitable for vigorous plant growth.

HOUSEKEEPING

The tree lawn areas shall be kept free of all construction materials, excavation spoil and equipment for the duration of the project and shall be kept free of trip hazards to allow pedestrians to pass around the work safely, unless other arrangements are made with the Sidewalk Inspector.

All areas disturbed by construction, specifically tree lawn areas, shall be restored to its original character by proper grading and topsoil and grass seed installation. All surplus soil, forms, equipment and concrete debris shall be completely removed from public property.