

Date: 12/31/16

Subject:

Review of Requirements for "Residential" Building Additions, Alterations, and Enclosures

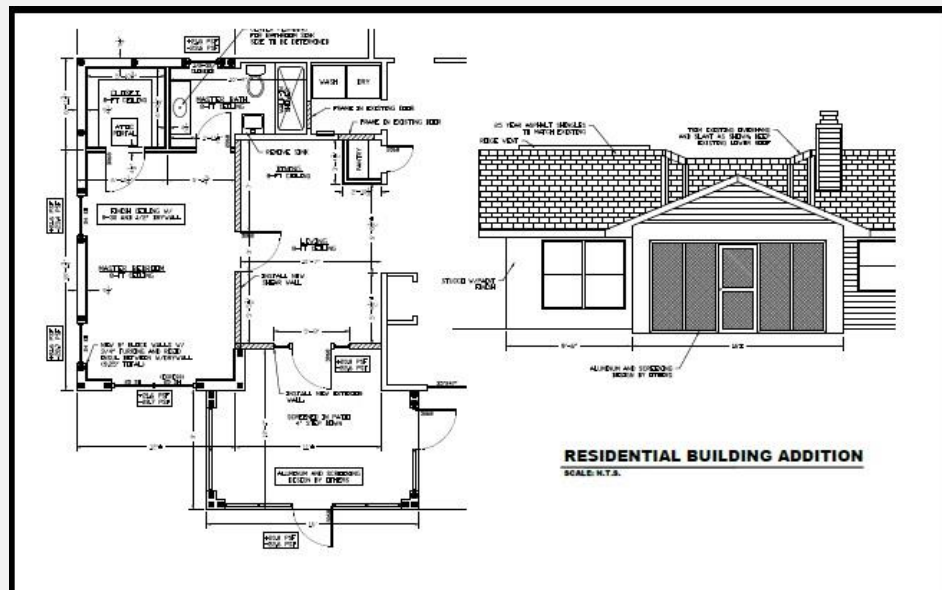
[Many aspects of Commercial work are similar, but all aspects have not addressed in this report]

Dear Owner/Builder,

Daniel F. Ardito, PE has completed this report to inform owners and builders of the permitting process for building additions and/or alterations within the State of Florida. This report focuses on the requirements of "Citrus County". Other counties have similar requirements but may differ or have other specific requirements not addressed in this report.

As of March-2002 all new Building Construction and Alterations within the State of Florida must be constructed to be in compliance with the Florida Building Code (FBC). Each County also has a "Land Development Code" (LDC) to mandate additional requirements for building construction. The Building Department, Health Department, Fire Prevention, and possibly SWFWMD, DEP, FEMA, and FDOT will all be involved in the review and approval process.

It has been my experience that most owner/builders are not aware of all requirements for the construction and permitting process and will underestimate the costs to complete their project.



Daniel F. Ardito, PE appreciates the opportunity of providing continuing professional services. If you have any questions or need further assistance, please feel free to contact me.

Submitted by:

Daniel F. Ardito, P.E.
FL PE No: 56694

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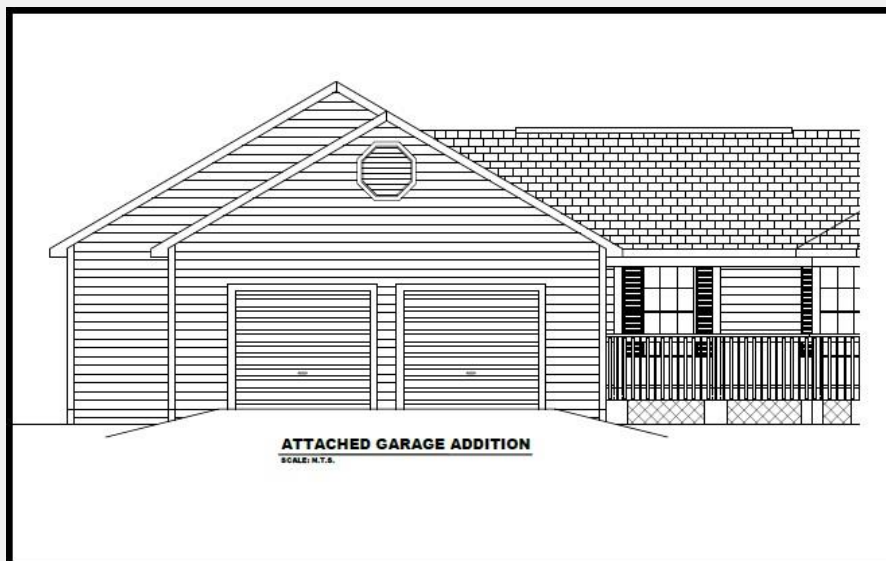
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Submitted by:

Daniel F. Ardito, P.E.
FL PE No: 56694

1) SCOPE OF WORK:

Daniel F. Ardito, PE as the Engineer/Architect does not include all items discussed within this report in my quoted price. My price will only include the price of the "Construction Plans". The following items are also required and are usually not included in the contract price:

- a) HVAC Design: Energy Sheets, HVAC Evaluation
- b) Electrical Load Calculations and Panel Schedules
- c) Plumbing Design
- d) Septic and Well Evaluation
- e) Site Plan
- f) Tree Counts
- g) Surveying
- h) Wet Land Delineation
- i) Flood Elevation Certificates
- j) Soil Borings

I can direct the client to the appropriate design professional, but no cost shall be accepted by my firm. All additional work by my firm shall be invoiced in addition to contract price.

Listed below is a description of the most common code requirements. Great care has been taken to list all requirements, but I in no way certify that all requirements have been listed.

2) EXISTING BUILDINGS ARE IN MOST CASES EXEMPT:

Much of the older buildings are exempt from the current building code requirements due to the fact that they are "Existing". Many wish to build similar to how they have seen their neighbor's buildings. Florida Building Code and the Building Departments in most cases do not require upgrading existing buildings to new code requirements.

Some of the existing buildings may have also been built without permits and were not designed by an engineer or architect and were never reviewed or inspected by the building department.

In either case your new construction is subject to the Florida Building Code requirements.

3) THE DESIGN PROFESSIONAL'S RESPONSIBILITY:

Being a state licensed Professional Engineer it is my responsibility to ensure your building plans meet "all" building code requirements. Most projects require an "Engineer of Record" or "Architect" to take responsibility for the "entire" project. On occasion I get the luxury of being a "Subordinate Engineer" and can design and certify specific elements for the Engineer of Record or Architect. But with most home additions I am the Engineer of Record. I am usually responsible for the following items:

- a) Structural Design
- b) Foundation Design
- c) Fire Codes and Egress
- d) Energy Efficiency
- e) Flood Zone Requirements
- f) Stairway, Handrail, and Guardrail Requirements

The days of using standard details and allowing the builder/contractor to figure out how to piece the structure together are fading fast. Chapter 471 of the Florida Statutes requires engineer certified plans to address “all” details for construction. I have been called to many projects that have failed inspections due to the owner/builder constructing with inadequate details within the engineered plans. Many engineers have been disciplined, fined, licenses revoked, etc by the Florida Board of Professional Engineers for certifying inadequate plans. It is not my intention to have this happen to me. Modern engineered plans are complex and contain many structural and non-structural details for full compliance with the building codes. Please review my website “Drawing” page www.danielarditope.net/SampleDrawings.html for many examples of complete engineered plans.

4) BUILDING PLAN AND PERMITTING REQUIREMENTS:

Every part of the “New” Structure (Addition) must be constructed in compliance with the Florida Building Code (Current Addition). Citrus County currently requires a 140 mph design wind speed. Engineer or Architect approved (signed & sealed) construction plans must be submitted to Building Department for review and approval. In addition to structural details for the new structure, the complete existing structure must be drawn to scale to show the required exit doors. (Some jurisdictions may require the entire interior floor plan be shown as well for bedroom and bathroom locations) The HVAC contractor will also need the existing & proposed structures dimensions to evaluate the existing HVAC system.

A site visit will be required by me to evaluate the existing building. I will not approve plans drawn by owner/builder unless the plans are of professional quality and include all structural details and requirements of the Florida Building Code. I will mark up professionally drawn plans to be corrected by owner’s draftsman.

5) FOUNDATION REQUIREMENTS:

The foundation system for the new structure must be of adequate size to resist all Downward, Lateral, and Uplift forces due to Wind, Live, and Dead loadings. The use of existing slabs and/or foundations may not be possible. I have encountered the following problems with using existing slabs.

- A) Most existing slabs are 3" to 4" thick (usually un-reinforced) which makes them very light with respect to the uplift loads imposed at the load bearing walls. Contrary to popular belief the load bearing wall will not “pick up the entire slab”. The American Concrete Institute (ACI) requires that all concrete be considered as “cracked”, this requires that steel must be present to hold slab together (ACI does not currently recognize Fibermesh concrete as having structural reinforcing). If your slab does have standard steel wire mesh, this is usually not adequate for the imposed loads. Usually a new footing will need to be installed beneath the existing slab. This will require drilling through existing slab and extending new anchor bolts or rebar to new footing.
- B) All wood and other veneers must be a minimum or 6" above finished grade for termite inspection requirements. This makes using a 4" slab impossible without additional concrete installed below.

6) FLORIDA PRODUCT APPROVAL:

As of July-2004 Building Components subject to wind loading such as: Steel Connectors, Windows, Doors, Siding, Shingles, Lintels, Manufactured Beams, etc. must have a valid Florida Product Approval Number which must be listed on the Building Department's Product Approval Sheets to obtain a building permit.

- A) Existing components will not be able to be relocated or reused within the exterior walls of the new structure without a valid Product Approval Number. Existing components may also be approved by Engineer or Architect. It is my policy to approve structural items only, such as Steel Connectors, Lintels, Beams, etc. if found to be adequate, but I will not approve windows, doors, shingles, siding, etc.
- B) I will provide product approval numbers for structural items such as Steel Connectors, Lintels, Beams, etc. that I specify in my plans, but will not provide product approval numbers for windows, doors, shingles, siding, etc. due to the vast variety of types and manufacturers of such items. (I am not shopping for you) Product Approval Numbers are provided at the following website: www.floridabuilding.org

7) FLORIDA EXISTING BUILDING CODE:

If any part of the new structure was to actually increase the loading or create new loading to any part of the existing structure, that portion of the existing structure will need to be brought into full compliance with the FBC (all the way to the foundation).

- A) This is usually caused by attaching a new roof system to the existing roof system as in a room addition. The Rearrangement of existing roof support columns such as in an open porch/carport will also require the existing foundations be brought into compliance. Sometimes it may be best (cheaper) to frame the new walls around the exiting porch/carport support columns so upgrades to the existing foundation system will not required.
- B) To certify the existing structure for increased loadings will require some knowledge of the existing construction. Wood frame structures are usually the hardest to certify due to the fact that most of the structural items are hidden with drywall and exterior finish. Older block buildings without vertical steel will not be adequate in this situation. I have had luck with installing a new load bearing wall in front of the existing wall complete with a new footing. Otherwise the entire existing construction must be exposed for Engineer/Architect to evaluate. The building department inspectors will also need to view all upgrades to existing walls.
- C) If the building addition exceeds the size limit, the entire building must be brought into full structural compliance with current Florida Building Code.

8) SEPTIC AND WELLS:

The Health Department will also be evaluating the existing Septic and Water Supply systems. A large increase in floor area or the addition of a new bedroom may require a larger Septic and Well. Older structures may not have adequate systems per current standards and may be required to install new systems. (This becomes increasingly difficult if the subject property has a high water table) If Health Department does not have records of the current systems, you may be required to have the existing systems measured by a certified septic or well installer. At the very least the Health Department may require that the current septic system be pumped.

9) ELECTRICAL:

Large building additions may require that your electrical system/panel be upgraded to handle the increased electrical loads per National Electric Code (NEC). If the value of the proposed improvements exceeds 25% of the value of the existing structure, GFI's and smoke detectors will need to be installed within the existing structure in required locations.

Residential and light commercial projects falling within specific parameters of size and cost may have the electrical, plumbing, and HVAC systems designed by a licensed contractor for each trade. If the owner/builder chooses to install these items without a licensed contractor, the design details will need to be provided by the engineer. Most engineering quotes do not include provisions for design of these items and extra costs can be expected. It is also my experience that a licensed contractor will not design your system for you without performing the work themselves.

10) FLORIDA ENERGY EFFICIENCY CODE:

All new enclosed additions will need to be constructed in compliance with the Florida Energy Efficiency Code. This will require that Energy Sheets be completed by certified HVAC installer. The existing HVAC system will also need to be evaluated and upgraded if necessary.

11) SITE PLAN:

A Site Plan is required for all new construction. Currently residential construction does not require Engineer/Surveyor certification. Site Plan must be to scale and must locate existing structures, well, and septic. Setbacks from property lines and ROW must also be shown. If you have a survey of the subject property, this will be adequate for the Site Plan. Simply sketch in all items required (to scale).

Citrus County has a tree count requirement and may require you to plant trees.

Certain properties are also subject to Deed restrictions and may require approval from a Home Owners Association.

12) FLOOD ZONES:

Structures located within Flood Zone "A" and "V" must also be constructed to FEMA regulations.

- A) All new structures must have the bottom of the lowest horizontal floor supporting member or the top of concrete slab set above the flood elevation. This may require a step between the existing and new structure. Raising the elevation of existing floor to match new floor may not be possible due to head room requirements. (Raising the roof will require upgrading all items below roof due to load increases. See similar discussion in item B below.)
- B) If the value of "improvements" exceeds 50% of the value of the existing structure the entire existing structure must be raised above flood elevation. This usually requires a new or upgraded foundation system. Raising the structural will in fact increase the loads to the foundations system due to lateral wind loads and will require that the existing foundation system be brought into full compliance with FBC. (The 50% is in reference to value of "building" only, not the property or accessory structures such as detached garages)

- C) A flood elevation certificate listing flood elevation, existing floor elevation, and existing ground elevations will also be required to be completed by a Licensed surveyor.
- D) Properties in Flood Zones A & V are likely to be located near wetlands. These may have to be located in the form of a survey.
- E) The problems associated with Structures located within a "V" Flood Zone are complicated and expensive due to the introduction of wave loading, break-a-way slab, and finished grade requirements. "V-Zone" construction is beyond the scope of this report.
- F) Structures located near certain waterways (usually near the coast) may require a berm and swale to catch 1/2" or 1" of stormwater runoff before entering the subject waterways. Certain properties may require topographic surveys to properly design such a system.

13) AFTER-THE-FACT PERMITS: [I currently do not accept these projects]

Due to the complexity, confusion, arguments, and frustration from previous projects, currently I do **not** accept "After the Fact Permit" projects but have kept this topic within this report for your reference.

Building without permits or engineering can cause future problems. The Building Department can impose heavy fines on a daily basis to be added to your taxes until said building is removed or approved by an Engineer or Architect.

The Building Department can be informed of non-permitted activities through the following:

- 1) Neighbor's Complaints and Ex Family
- 2) Property Appraisers Reports
- 3) County Officials Living Nearby or Driving by
- 4) Items Shown on Engineered Plans for New Construction Can Also Reveal Previous Un-Permitted Work to the Plans Reviewers
- 5) You Can Even be Held Responsible for Previous Owners Un-Permitted Activities

After-The-Fact construction is no different than new construction, all must be in compliance with the Florida Building Code. Obtaining After-The-Fact approval can be extensive and expensive due to the fact that most structural items are hidden. The building department has been requiring engineer's approval on all missed inspections. (these items would need to be exposed for they cannot be approved without viewing) I have encountered the following problems with After-the-fact approvals:

- A) The roof and wall plywood sheathing must be nailed to roof trusses and wall studs with the appropriate nailing patterns. Usually the shingles, felt, and siding cover this so they cannot be viewed.
- B) The very nature of reinforced concrete and masonry systems does not allow a full approval of the foundation, block wall, and/or bond beam systems. The presence of steel can sometimes be verified with a metal detector, but the detector tells very little about quantity, size, laps, hooks, placement, etc of the reinforcing. If wire mesh is present under the stucco finish the presence of steel cannot be confirmed with any confidence.
- C) Doors and Windows that have original manufacturers wind rating stickers removed cannot be approved without some sort of structural analysis/inspection.

D) Electrical is a major burden to trace, and most plumbing is embedded below the floor slab.

E) I have heard “most” of the comments/excuses already and believe me when I say that I am not approving any construction for any of the following comments:

- 1) **“I Have Been Building for Many (Usually 20 to 40) Years and I Know How to Build”** (Most are very good with downward forces but forget or have not considered “uplift” or “side” winds)
- 2) **“I Did Not Know I Needed Permits”** (This is getting harder to believe each year)
- 3) **“Its all Been Built to Code”** (I ask a few questions about the code and the truth becomes clear)
- 4) **“Its Just a Shed”** (Sheds/Garages/Barns/etc. are all subject to FBC requirements)
- 5) **“Terminal Illness”** I have also had people call that indicated they were dying and needed to get the project approved real fast

I have in the past prepared construction drawings that show how the structure **“should”** have been constructed (and I did try to make what had been built work), but I will not approve that the structure has actually be constructed in full compliance with my drawings or the FBC. There are too many hidden items to guess at (rebar, plywood nailing, steel connectors, etc)

Keep in mind that the Engineer/Architect is liable for the “approved” structure when the Insurance Company’s engineer finds construction errors that have been certified within an After-The-Fact drawing/inspection.