

Second Edition

G.BATISTA's ONE-HOUR GUIDE TO **Concrete Repair**

IN SOUTH FLORIDA

What is Spalling

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**Find a
Contractor**

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STEP-BY-STEP

**To Ensure
Project Success**

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Impact**

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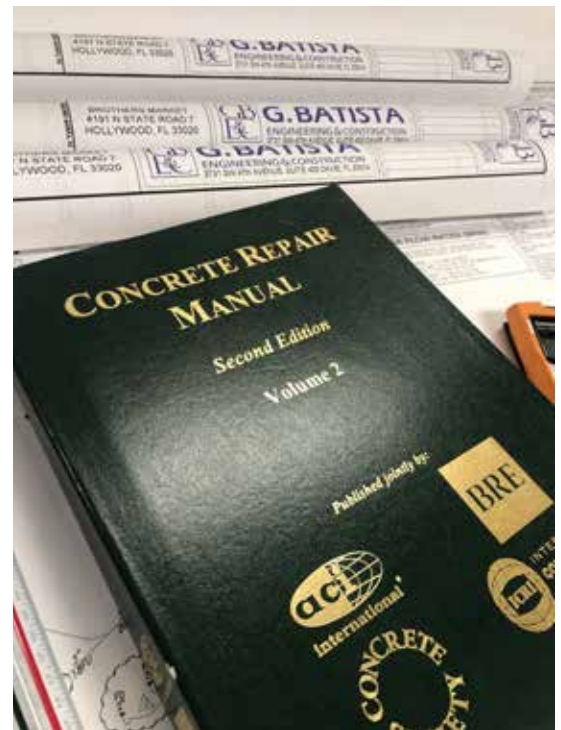
**Just ask
G. BATISTA**

ABOUT THE AUTHOR



DID YOU KNOW?

Mr. Batista is one of the leading engineers in South Florida with over 30 years of experience in both engineering and construction



For over 30 years, Mr. Batista has been a Licensed Professional Engineer and Licensed General Contractor in multiple states and is a well-respected member of the concrete construction and repair industry. Mr. Batista sat on the Broward County Board of Unsafe Structures and has been Director of the Board of the largest Hispanic Professional Engineering Association in the United States and has won several professional awards and recognitions.

In the year 2000, Mr. Batista began Real Estate Engineering, LLC and is the President of G. Batista Engineering and Construction, a prominent Engineering and Concrete Repair contracting company with multiple locations.

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INTRODUCTION BY THE AUTHOR— WHY THIS GUIDE?

I have written hundreds of reports for clients and court cases as an expert witness; the style and language I use in these reports is very professional, since they are for the use of other engineers, judges and lawyers. This guide, on the other hand, is written for the non-engineer types who want to be informed about a topic that is seemingly simple, but in actuality is very complex.

In all the years of performing engineering, construction, and inspections for concrete repairs, I always deal with a group of people who ask themselves “why do I have to spend all this money to repair concrete?”, “why is it so important?”, “why was this not repaired years ago?” These are all extremely valid questions and ones that I must answer to folks time and time again. It is part of my job as an engineer to educate my clients as best as possible, because an educated and informed client is the best client. Having an open dialogue prompts trust, and without trust, the job eventually becomes unnecessarily more difficult for both parties.

The engineer stereotype is of a person who is rigid in personality and lacks that caring nature we often see in teachers or nurses. I consider myself the opposite. It is in this role of instructor and partner that I place a lot of weight. I love to talk to people, take care of their issues and solve problems for them. That’s why I became an engineer. I am not interested in sitting in front of a computer all day and juggling formulas and cranking out plans. I love interacting with people and helping them arrive at the best possible solution to their problem.

Put yourself in my shoes for a second. When I get a call to be involved in the concrete repair of a building, I am automatically confronted with a group of people with differing opinions. There are those who insist that the repair work must be done, those that think it is unnecessary, and those that have varying opinions on everything in between. A lack of knowledge, and at times denial of the issue is the fuel that drives unnecessary confrontations between owners, Boards, Property Managers and the residents (who are the ones who end up paying the bills by way of loans and assessments). As an engineer in the concrete repair business, my first enemy is not the concrete corrosion, it is the lack of education on this topic.



In this role, I have taken it upon myself to produce a video and write this guide to teach, and then let the informed masses make the decisions that best suit them. My years of experience have taught me that an informed client makes better decisions. Hopefully this guide will be useful to you. This informative guide will not replace the good judgment of an experienced engineer or contractor, nor will it help you deal with the almost infinite number of issues that will arise during your repair process. This guide aims to put you in a position where you, and those you hire, will start off on the right path and hopefully remain on the same wavelength.

I must also mention that this guide is in no way meant to give legal advice. At a minimum, you should always hire a lawyer whenever there is a contract on the table. 

WHAT IS CONCRETE SPALLING?

Florida and Florida's Coast – Beautiful beaches, impeccable weather and an all-around great place to live. However, these positive attributes do not come without their share of specific problems. The high concentrations of corrosive agents that are present in the atmosphere are especially problematic in coastal climates such as ours. These naturally-occurring substances seep into the concrete of coastline structures and start rusting the steel reinforcing grid that acts as support inside the concrete. This phenomenon can eventually render the entire structure dangerous, and can progress into a state of disrepair that is possibly life threatening. Although the corrosion process is more complex, this guide aims to provide a simplified explanation for those who aren't technically inclined. The picture above shows what a typical spall looks like. The classical spall is one where you remove the loose and cracked concrete and the reinforcing steel is exposed.



When the original contractor installs the steel reinforcement inside the concrete during the initial construction of the building, it is typically in pristine and non-rusted condition. That steel has a protective layer that is called the “passivation layer.” Coastal environments contain seawater and a high concentration of salts (chlorides) that corrode the concrete structures in close proximity. When these chlorides permeate the concrete, it damages the passivation layer on the reinforcing steel, causing the steel to rust, expand, and split

If you live near the coast, you've likely observed multiple examples of this process in action without even realizing it. You've likely observed cracks or portions of the concrete that are ready to break free from buildings, especially if you live in a coastal region. These are just a couple of examples of this process in action. When you strike the concrete with a hammer, the rusted steel reinforcement, or “rebar”, is easily exposed. The technical term for this cracked concrete is called “spalling.” These spalling cracks are merely an indication that the reinforcing steel (rebar) is corroding and must be repaired if your structure is to remain intact and, more importantly, safe.



Concrete has been used for thousands of years in various forms. The Romans built magnificent concrete structures that survive to this day, such as the Pantheon, with its impressive concrete dome. The Pantheon (see picture) however does not have any reinforcing steel in it because of its design. The dome's concrete was always compressed under its own weight. Concrete by itself, without any steel rebar inside of it, can withstand a tremendous amount of this compressive force. On the other hand, concrete cannot withstand a large amount of tensile force, which pulls it apart. As domes are

less relevant in the modern era of design, the structures that we build today, from regular homes to high-rise condos, are subjected to both tensile and compressive forces. Around the turn of the century engineers noticed that if you include reinforcing steel inside the concrete, it could withstand a tremendous amount of tensile forces in addition to compressive forces. This meant that engineers could now design and build all sorts of structures without being hindered by concrete's structural limitations. This is how the era of building modern concrete structures began.

As such, without including steel inside your concrete to support the structure, you would not have a soundly-built building. The reinforcing steel (also known as "rebar") inside the concrete literally keeps your entire structure from crumbling to the ground.

It is important to note that not all cracks in the concrete are an indicator of spalling. An Engineer (such as myself) will perform the appropriate testing to determine if it is indeed spalling and if so, the degree of seriousness. The seriousness of a spall has everything to do with the size

and the location of the damage. It can be in a column, in the slab, on a beam or inside the property itself. Although falling pieces of concrete can cause damage to life and property, it is not the source of the most danger.

The real danger is much more insidious. As the reinforcing steel weakens, the concrete structure as a whole weakens as well. If the problem is left unattended, the concrete structure will eventually collapse resulting in serious damages to the building and could threaten the lives of those in proximity to the building as well. This is the reason why all of the coastal cities here in South Florida, from Boca Raton to the Keys, instituted a permitting process where these damages are identified, classified, documented, submitted, approved for repairs and ultimately performed.

At this critical juncture, an engineer is vital since it is the engineer that will guide you and provide invaluable expertise through the entire repair process. While the aforementioned process is intricate, your engineer, as well as the following very basic, nine steps will provide you with a simplified way of staying the course. 

OVERVIEW OF STEPS

STEP 1 – Choose your engineer.

STEP 2 – Your engineer will identify, classify, and quantify the different types of concrete damages. The repair cost varies depending on the location and severity of the damage. We will call this the "Quantification" document.

STEP 3 – The Engineer puts together another set of documents called the "Plans and Specifications" which are the instructions to the contractor on how to perform the repairs. The "Quantifications" are included in these "Plans and Specifications".

STEP 4 – The Engineer can assist you in putting together a "Bid Package" which will give specific instructions to the prospective bidding contractors on how to put together their bid and when to submit it. This "Bid Package" will contain the "Plans and Specifications".

STEP 5 – Choose a contractor and negotiate a contract.

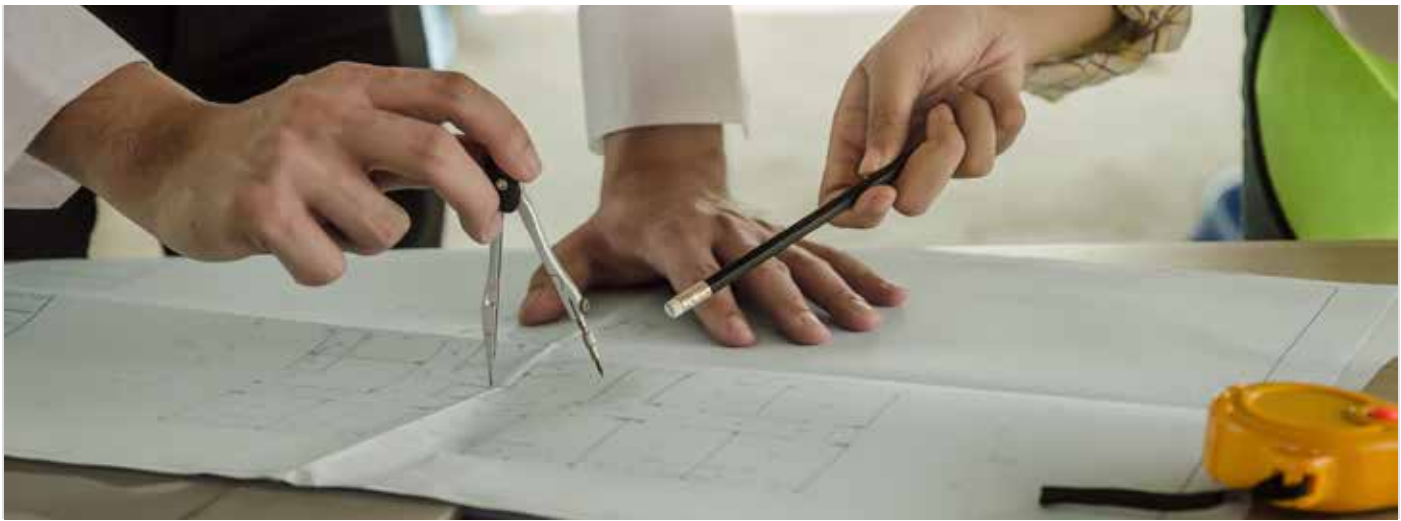
STEP 6 – Submit for Permit.

STEP 7 – Get the Permit Approved at the Building Department.

STEP 8 – Perform the Repairs and Construction.

STEP 9 – Maintenance.

BEFORE STEP 1 – A PROLOGUE



Before we begin this very first and critical step, it is important to mention that not all cracks in the concrete require that you hire an engineer. Cracking can be caused by other factors such as delaminating stucco, which is stucco that has separated from the concrete beneath.

The first step in properly diagnosing the cause of a crack is taking a hammer to the concrete and removing the hollow stucco. If the underlying concrete does not contain any cracking, then you simply have to remove the remaining loose stucco and patch it up again. Depending on the amount of stucco to be removed and replaced, you probably don't need to hire a contractor nor pull a permit to complete this repair. Of course, it is always best to call to your local Building Department to confirm this. It's that simple.

Unfortunately, many lay-people mistakenly diagnose concrete repairs for stucco repairs. Many times they are in denial and/or are unwilling to pay for a proper structural repair. They proceed to remove the stucco and/or concrete and patch over the hole without taking the proper measures to remedy the corroding steel issue. This is the worst-case scenario. Patching up the affected area is merely a cosmetic fix and the steel rebar continues to weaken and becomes increasingly unstable as time wears on. By the time the cracking reappears, (and with certainty will reappear) it will have spread much further into the concrete and will require a much more extensive and expensive repair. The old adage of "a stitch in time saves nine" certainly applies here.

The onset of corrosion in the steel rebar is to a building what cancer is to a human. The disease spreads un-daunted if left unattended. Cancer patients have chemotherapy and a multitude of other treatments to rely on, while buildings have only one course of action when dealing with their spalling "disease." The only way to remedy this "reinforcing steel cancer" is through direct surgical removal, which is very technical and requires a measure of quality control and inspection (by your engineer) that differs from typical construction projects. We will delve into this method in more detail later in this guide.

It is also important to note that the procedure as outlined in this guide is geared more towards projects that are larger in scope. For example, you will not necessarily need an in-depth screening of engineers and contractors if you are only going to be commissioning repairs for one or two small, spalled areas.

Let's begin by enumerating and explaining each of the steps in more detail. Bear in mind that the enumeration of these steps is a basic guide to instruct the reader, and not intended to be used as a strict template to follow for each and every project. It is important to understand that larger projects, such as high-rise buildings, must go through each of these steps while smaller projects, such as single-family homes, can customize the steps in a way that best suits them, although the basics will continue to apply for any project on the spectrum. The engineer that you hire will be the person to guide you through the steps in a way that is tailored specifically to your project. 

STEP 1 – CHOOSE YOUR ENGINEER

As a big basketball fan, I compare your engineer to a head coach of a basketball team. The coach teaches and advises the team members on the best approach to compete and also presents and implements a plan that will ensure ultimate victory.

It is imperative to bring in your coach at the very beginning of the repair process. Why? Your engineer is the professional that is experienced and qualified to help you through all the steps. This is of particular importance, considering that a licensed engineer should perform the initial steps. Choosing the right engineer is critical to the success of your restoration project.



You might be able to hire a reputable, competent, and experienced contractor to inspect the building to perform an assessment of the quantities to repair, and even give you a price to perform these repairs. He may not even charge you. I have seen time and time again people who do not want to pay an engineer, or an engineering firm, to perform this task. This is absolutely the wrong way to go about it.

Let it be known that I am both an engineer and a contractor and am not biased either way. Contractors will probably advise you not to go with an engineer first. Let me explain further.

First and foremost, the quantification that the contractor performs will not be valid for submission to the city (for permitting) unless it is signed and sealed by an engineer. No engineer that I know is careless enough in his duties to sign off on a quantification that a contractor performs without his direct involvement. This offense is against Florida Law and punishable by the Florida Board of Professional Engineers. I'm not saying that contractors are not qualified; I know many contractors that can perform this work just as good, and at times even better, as some engineers with a license can. This is not the point. The point is that if you are going to pull a permit to perform these repairs (and in the 99.9% of cases, you must), then all the documentation relating to the quantities, methods of repair, plans and specifications must be signed and sealed by a licensed engineer to be valid and accepted by your Building department. If a contractor performs this work for you, it will likely be a colossal waste of time for him, since the inspection job will have to be re-done by the engineer and the inspection process will likely commence all over again.

Choosing the right engineer doesn't have to be a grueling task. A written proposal to complete the job should suffice as a tool to compare candidates to each other. You should ask them to affix the following information:

- Past projects
- References
- Qualifications
- Copies of their licenses
- Insurance information (Errors & Omissions insurance)

Many Associations have found it helpful to ask the engineers to talk to the Board and introduce themselves and answer questions on the spot. But you must keep in mind that the cost of the engineer is typically a fraction of the eventual cost of the repairs. All your energy should not be focused on hiring the right engineer, but later analyzing the much larger cost of construction and hiring a reputable and competent contractor.

I have compiled a checklist as a guide for those seeking an engineer for their concrete repair project. 

CHECKLIST TO CHOOSE YOUR ENGINEER

☐ Florida Professional Engineer License Number. Confirm if the license is valid by logging on to www.myfloridalicense.com. You can also verify if any complaints have been levied against the Engineer.

☐ Obtain a Certificate of Authorization from the Florida Board of Professional Engineers. To offer engineering services in Florida under the name of an Association, Fictitious name, Partnership, Corporation or LLC, the business entity must hold a Certificate of Authorization pursuant to Florida Statute Section 471.023.

_____ Years of Experience in Concrete Repair.

\$_____ Amount of E & O (Errors and Omissions) Insurance. Also known as Professional Liability Insurance. This covers the Engineer (and thus the Owners) from mistakes or omissions made in the normal course of the work. \$1 Million is the norm for established firms.

\$_____ Amount of General Liability Insurance. If your engineer will be performing inspections on the project, the engineer (and as a consequence, the Owner) should protect himself from liability in the event of property damage or bodily injury at the project. \$1 Million to \$2 Million is the norm for an established firm.

_____ Intangibles. Insist on meeting the licensed Engineer in person and any person that he will delegate your project to. Rate your engineer on his communication and interpersonal skills. Is the engineer approachable and accessible? Does the engineer exude leadership, respect, and confidence needed to lead the team? You can have the best engineer in the world, but if that person is not accessible, uncommunicative, or unapproachable, then you really don't have much as much as you could.

_____ Rate your engineer on how directly involved is he going to be with your project. Is he going to delegate to subordinates? If so, whom will he delegate to? Obtain information on these people also.

_____ Amount of Technical Staff to perform the work (including required inspections) when the project requires it.

Does the engineer have an established physical office? Yes ☐ No ☐ For how long have they had this office? _____

Has the engineer ever been sued or have any legal claims been made against him or the company with reference to his duties as an engineer? Are there any current and pending claims?

PAST PROJECT REFERENCES

Reference #1: Name: _____

Contact Information: _____

Reference #2: Name: _____

Contact Information: _____

CHECKLIST TO CHOOSE YOUR ENGINEER cont.

Reference #3: Name: _____

Contact Information: _____

- ☐ Does your engineer also have hands-on experience in concrete repair (Contractor) and is someone who can bring that dimension of experience to the table when performing the engineering facet of the project?

Memberships in Associations related to the concrete repair industry

1. _____

2. _____

3. _____

4. _____

Leadership Positions or in Professional Organizations (Is the Engineer respected in his field?)

1. _____

2. _____

3. _____

4. _____

CHECKLIST NOTES:

1. Keep in mind that the cost of an engineer is a small fraction of what your construction costs are going to be. Make your main focus hiring the right contractor and helping your engineer stave off issues before they happen.
2. This Checklist is to be used only as a guide in order to help you choose the right engineer and to empower you to ask the right questions of those you are looking to hire.

STEP 2 – CLASSIFY AND QUANTIFY

Now that you have your engineer on board, the next step is to identify, classify and quantify the amount of concrete that requires repair.

The engineer must scour the building in search for areas of concern that must then be categorized and quantified. These quantities are critically important to the prospective contractors who will provide you with a price to perform the repair. The engineer compiles a document that not only has the quantities and classifications, but also contains the materials to be used, and the methods for repair (which is step three of this guide named “Plans and Specifications”).

These plans and specifications are extremely important for two reasons: 1. They will be sent to the competing contractors so they can bid on the same quantities and methods of repair so that the different quotes can be compared on an apples-to-apples basis and, 2. These documents are going to be submitted to the City by the winning contractor so they can pull a permit to start the repairs.

The importance behind classifying the concrete repairs is that each different class of repair requires a different set of skills and/or materials to perform. As such, the bidding contractors will set different prices for each class of repair and will provide you with a complete price once they are given the complete quantities and classifications of the concrete repairs.

Lets look at some very basic and common types of repairs:

BALCONY EDGE SPALL



The picture above illustrates a balcony edge spall that is currently undergoing repair. You can see where the contractor has already chipped out the concrete and has exposed the

rusty steel underneath the balconies. Balcony edge spalls are common due to the fact that the edges are the most exposed to the elements. There is a specific method of repair to remedy spalling in this area. These repairs are typically measured and quantified by the Linear Foot (LF).

BEAM SPALL



A beam spall is one of the more serious spalls because a concrete beam is designed to support the loads of other structural members. If a beam structurally fails, then all the other structural members that it was supporting will most likely also fail. Beam repairs are typically quantified and measured by the Cubic Foot (CF).

COLUMN SPALLS



Because columns always support other structures above them, these types of spalls are also serious in nature and should be repaired once they are discovered. Contractors take special precautions in performing these repairs since they must provide temporary support (or “shoring”) to the surrounding areas to prevent them from failing while the repairs are being performed. Column repairs are typically quantified and measured by the Cubic Foot (CF).

CEILING SPALLS



Ceiling spalls are dangerous because falling pieces of concrete could cause injury or damage to property. If left unrepaired, these balconies or catwalks will eventually collapse. Ceiling spalls are quantified and measured by the Square Foot (SF) and typically are more expensive to repair due to the difficulty involved in repairing them. Please note that ceiling spalls can be sub-categorized as a “partial depth” repair and also as a “full depth” repair. The picture above shows a partial depth repair in progress. At times, the spalling on the ceiling is so serious that the chipping of the concrete goes through the entire slab. When this occurs, the contractor must take a completely different approach to repairing the area (and thus the unitary price to repair will likely increase from the initial quote). This is why many engineers, upon performing their repair survey, make a distinction between a “partial-depth” and a “full-depth” repair. The fact remains, however, that it is virtually impossible for an engineer to accurately define these quantities without X-Ray vision. I will expand more on this issue later in this guide.

FLOOR SPALL



Floor spalls are easier to repair than ceiling spalls, but the ultimate result of not performing repairs is eventual collapse. You will note in the picture above that someone has already taken the time to do a patch job that did not work. If this patch had performed correctly to begin with, this slab would not be in this state of disrepair today. To make matters worse, the owner will now have to pay twice for the same repair.

OTHER SPALLING ISSUES YOU’LL PROBABLY RUN ACROSS



Electrical metal conduit also rusts and causes spalling. If you look closely at the picture above, you will see that the electrical conduit has been repaired with a small portion of conduit. It is a good idea to have an electrician handy when performing concrete repairs due to accidental cuts to the electrical lines.

Classification is important because your prospective bidders must know the nuances of your concrete repair needs in order to provide you with proper pricing. Your engineer must also do a quantification of each type of spall in tandem with the classification. When a contractor knows the type of spall and the total quantity of that spall in the building, they can arrive at a total price to perform the repair. For example, if the engineer determines that the entire building contains 555 Linear Feet of edge spalls, the contractor then multiplies this number by how much he can perform this work for. For the purposes of this example the unitary price is \$100 per Linear Foot.

$$555 \text{ Linear Feet} \times \$100/\text{Linear Foot} = \$55,000$$

Thus, as the formula above has illustrated, the contractor will quote \$55,000 to repair all the edge spalling in this building. Of course, there are column, beam, floor and ceiling spalls along with a host of other items. In later chapters we will discuss this process in more detail.

It should suffice to say for now that the Classification and Quantification performed by the engineer is key for a couple of reasons:

1. It provides the basic information to be included in the Plans and Specifications that will be submitted to the city to obtain a permit.
2. It gives the contractors the needed information so they can properly price the job and give you an more accurate idea of your project cost.

In order to ensure a job well done, the Engineer must inspect the entire building looking for instances of spalling. An experienced professional should have a knack for finding these spalls. However, even the most experienced engineers do not have x-ray vision. To find a spall is one thing, but to quantify it is an entirely different matter. The method of repair requires that the contractor "chase" the reinforcing steel until they find "clean" rebar, which can be difficult in certain situations.

SAMPLE QUANTIFICATION AND UNIT PRICING FROM A CONTRACTOR

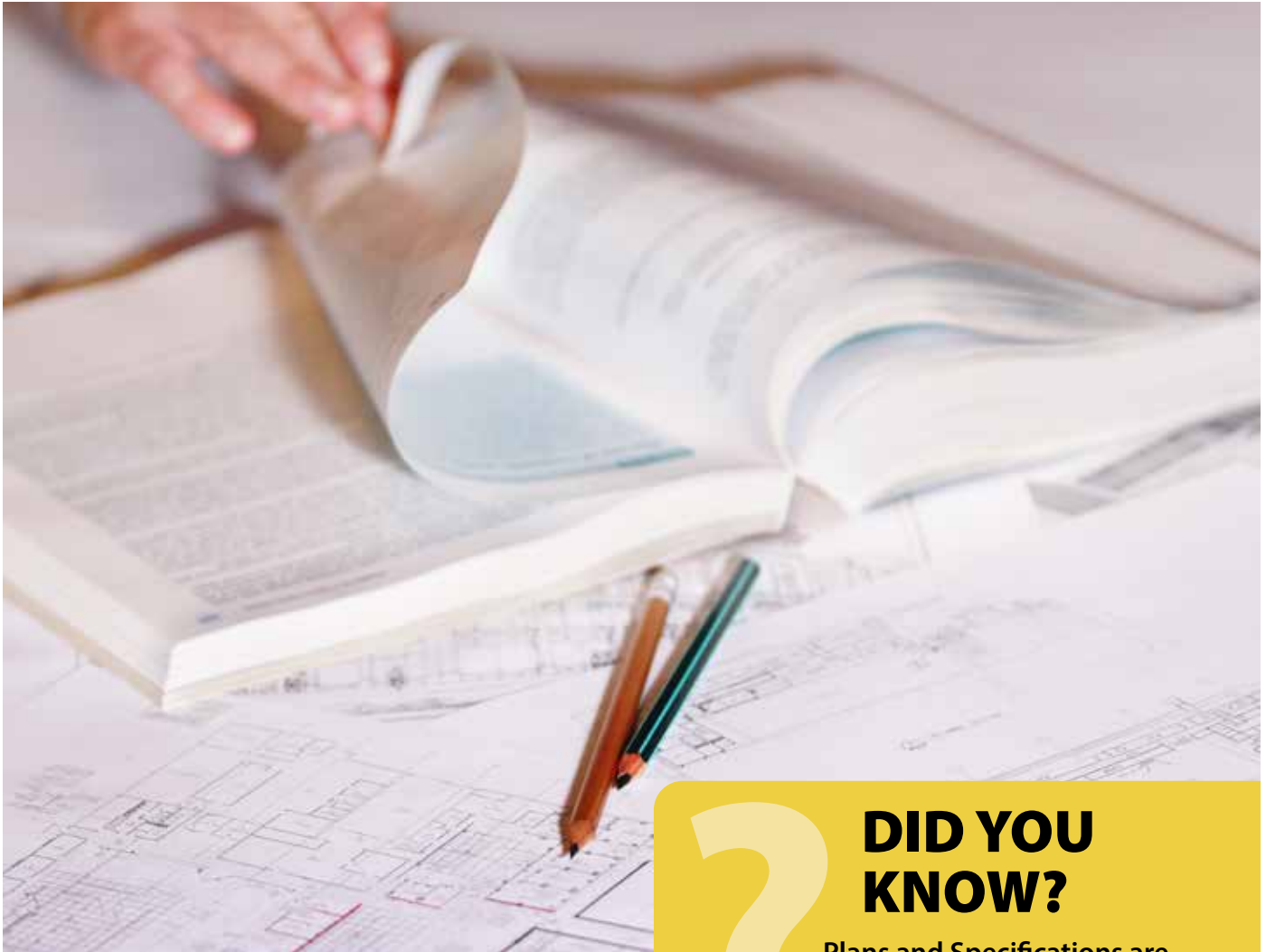
The table below is a sample of quantification for a repair that was performed some time ago. We have purposely removed the actual quantities and drastically changed the unit price numbers. Several items should be noted:

1. Not all projects are the same. The size of the list may vary greatly from building to building depending on items such as the scope of work required by the owner, the state of deterioration the building is in, and the judgment and experience of the engineer.

2. Once your engineer compiles the list of repairs, he can also provide you a budget number for these repairs if they are so qualified. 

CONCRETE REPAIR PROJECT FOR FLORIDA CONDOMINIUM @ 1234 MIAMI AVE., MIAMI, FL 33028					
CONCRETE REPAIRS AS QUANTIFIED (ALL AREAS)					
ITEM	ABBV.	Total Quantity	UNIT	Unit Price	Amount
Full Depth Repair	FD	14 SF		\$ 100.00	\$ 1,380.00
Overhead Repairs (up to 4")	OH	554 SF		\$ 100.00	\$ 55,430.00
Partial Depth Repair (up to 4")	PD	32 SF		\$ 100.00	\$ 3,220.00
Edge Spall Repair < 8" from edge	ES	67 LF		\$ 100.00	\$ 6,670.00
Beam Repair	BR	68 CF		\$ 100.00	\$ 6,785.00
Column Repair	CR	17 CF		\$ 100.00	\$ 1,725.00
Wall Repair	WR	7 LF		\$ 100.00	\$ 690.00
Stucco Repair/Delamination	SR	283 CF		\$ 100.00	\$ 28,290.00
Crack Repair (rout and caulk)	CR-RS	- LF		\$ 100.00	\$ -
Stair Repair	SR	3 CF		\$ 100.00	\$ 345.00
OTHER RELATED ITEMS FOR BID					
Electrical Conduit Replacement		160 LF		\$ 100.00	\$ 16,000.00
Rust Spot		208 EA		\$ 100.00	\$ 20,800.00
Cast Iron Sewer Pipe Replacement (Max 5 LF)		1 EA		\$ 100.00	
Remove and Reinstall Sliding glass door		1 EA		\$ 100.00	
Install and remove a plastic dust wall		1 EA		\$ 100.00	
Install and remove a wood dust/weather wall		1 EA		\$ 100.00	
Crack repair by Pressure Injection		1 LF		\$ 100.00	
Crack Repair (rout and caulk) at building exterior		1 LF		\$ 100.00	
Leaking Ceiling Cracks (urethane or epoxy injection)		1 LF		\$ 100.00	
Drill and Epoxy dowels		1 EA		\$ 100.00	
Epoxy Injection		1 LF		\$ 100.00	
Emergency Hurricane Protection for building - if needed (Cost-Plus)					
Labor rate (loaded, to include profit)		1	HR	\$ 30.00	
Material at cost-plus (enter percent over cost of mat		10	Pct.	10%	
SUB-TOTAL = \$					141,335.00
WATERPROOFING					
ITEM	ABBV.	Quantity Bldg. 4	UNIT	Unit Price	Amount
Stairs					
Floor Preparation Work	FTR	1,120	SF	\$ 3.00	\$ 3,360.00
Appy Sherwin Williams Sher-Crete Waterproofing	FPW	1,120	SF	\$ 8.00	\$ 8,960.00
Catwalks					
Floor Preparation Work	FPW	1,408	SF	\$ 3.00	\$ 4,224.00
Appy Sherwin Williams Sher-Crete Waterproofing	WP	1,408	SF	\$ 6.50	\$ 9,152.00
SUB-TOTAL = \$					25,696.00
ALL CONTRACTORS					
General Conditions			UNIT	Amount	
Mobilization Cost			LS	\$ 28,763.94	
Permit Cost			LS	\$ 10,355.02	
Bond Cost (Bond is required)			LS	\$ 3,658.77	
Other Cost:				\$ 2% of the Project Cost	
Other Cost:				\$	
TOTAL COST				\$ 334,062.00	
CONTRACTOR:					
Corporate Name:					
Address:					
Officer's Signature:					
Officer's Printed Name and Title:					

STEP 3 – PLANS AND SPECIFICATIONS



“Plans and Specifications” are the documents that the contractors will use to estimate their price for the repairs. These prices will then be compared on an apples- to-apples basis to the other prospective bid prices. The “Plans” part is simply a pictorial representation of the work to be performed, while the “Specifications” is the worded description of how the work should be performed.

For example, The Plans can contain the following items:

1. A Plan View of each balcony to be repaired.
2. A Plan View of each area that is to be repaired.
3. An elevation drawing (side views) of the building with marks denoting where the work is to take place.



DID YOU KNOW?

Plans and Specifications are critical to your project. Contractors will not know how to price out your project without them. Either way, they are required in order to pull a permit.

For example, The Specifications can contain the following items:

1. A description of the type of stucco (or other materials) to use along with a manufacturer’s cut sheet describing the product along with application methods, composition, safety precautions, etc.
2. Sheets from the manufacturer on the type of waterproofing and paint to be used.
3. A written guide of the method of repair and the codes to follow (Florida Building Code, ACI, ICRI, ASTM, etc.) 

STEP 4 – BID PACKAGE

Step 4 is to compile a third document named “Bid Sheets” or a “Bid Package.” This package is important since it will be sent to your prospective contractors and will include detailed information about the damage and instructions for repair, among other things. For instance, you will want to tell your prospective contractors items such as:

1. That they cannot begin work before 9am.
2. Parking or security arrangements.
3. If they will require special insurances to work there.
4. If they will be required to carry a bond for all or part of the work.
5. If the project must be completed by a certain date.

These items are aspects of the job that don’t necessarily have to do with the actual repairs (as is the case with the Plans and Specifications), but it is information that your bidding

contractors must know up front before providing you with a price that will more easily compare with the other bidders. Your engineer, especially one with an extensive background in construction, is critical in acting as your consultant in helping you compile a thorough and complete Bid Package that makes sense to the contractors and minimize issues and misunderstandings during the repair process.

WE HAVE ALL OUR DOCUMENTS – NOW WHAT?

These three documents form the basis of your contract – The “Contract Documents” or “CD’s:”

1. The “Classification and Quantification” from Step 2 that your engineer came up with during his inspection of the structure.
2. The “Plans and Specifications” from Step 3.
3. The Bid Sheet from Step 4.

Now that you have compiled the CD’s, you can share these documents with prospective bidders so that they can give you an accurate quote on a set amount of Quantities and type of materials, along with the specific instructions for the repairs they are to perform.

Ensuring that you distribute the same information to your bidders is the only way you will be able to get prices that you can then compare on the same playing field. You will be able to have the information necessary to make a more informed choice as to who your contractor will be.

I’ve tried to simplify this complex process into some basic steps. Don’t let the straightforward manner in which these steps are laid out lead you to believe that this is a simple process. However, with this basic knowledge you will be more prepared to face the challenges ahead. Your engineer is key in these efforts. 



STEP 5 – CHOOSE A CONTRACTOR

You have the bids and now it is time to choose a contractor. Your engineer, especially one with a strong construction background, can be invaluable in making an informed decision. They do this by studying the bids, helping you interview the contractors, and aiding in making the final choice. Now is the time to determine whether you want your engineer involved in the decision making process in regards to choosing a contractor. Following this guide, you would have already hired your engineer during the very first step of the process and delineated the engineer's involvement in choosing the contractor in the engineering agreement. Every project is unique and what may be a good fit for one contractor on one job may not be a good fit for another.

Choosing the right contractor for a job, especially if it is a larger project, can become a complex endeavor considering the legal, technical and financial ramifications for the Owner. This guide serves as a basic guideline but in no way is intended to replace the experience and guidance of an experienced attorney and/or engineer.

There are two major items to look for when hiring a contractor. The first is *price* and the second is the contractor's *experience and capacity* to perform the work.

The price aspect is reduced to the unit prices that the contractor provides plus the other items that may be added. These include profit, overhead, permit costs, insurance costs, contingencies, add-alternates, among many other items. If you followed the prior steps as laid out in this guide, the job should be greatly simplified because your engineer had asked your bidders to lay out the pricing in a way that you could compare to the other contractors on an apples-to-apples basis. However, because the task has been greatly simplified does not necessarily mean that it is easy. Your engineer is still your best ally to effectively tie the loose ends together so that the process is cohesive. Let's face it,

many contractors have tricks that they use to deflate the prices against other contractors while making it look like they are in compliance with all the contract documents. These include:

1. Adding or deleting items in the scope of work even when it is expressed in the contract documents.
2. Conveniently omitting language in their bid.
3. Adding language to their bid that contradicts the engineer's instructions.
4. Failing to review and sign certain key documents as per the engineer's instructions.



There are many contractors out there that are reputable and want to do the right thing. If they do some of the things as expressed above, it does not necessarily make them a bad contractor. This is the way it is in this business and the few bad contractors out there, unfortunately, give the rest of us a bad name. This is all the more reason why you should seek to become as educated as possible on the process and seek the best professional advice that you can.

Here are a few basic tips that you should keep in mind when choosing a concrete repair contractor:

CONTRACTORS CHECKLIST

Contractor Years of Experience _____

☐ Does the Contractor have a license as required by Law?

What is the License number? _____

Whose name is it under (Qualifying Agent)? _____

☐ Is the Qualifying Agent the same person as the owner of the bidding construction company? Please refer to the Fraud Section in the Concrete Repair Guide under "Unlicensed Activity."

☐ Is the contractor insured with General Liability and Worker's Compensation as required by law? What are the limits of coverage? \$ _____ .

☐ Are the limits sufficient for the project?

Is the insurance in the name of the company and/or the individual that is signing the contract? _____

Please refer to the Fraud Section in the Concrete Repair Guide under "Uninsured Activity."

CONTRACTORS EXPERIENCE

Three names and contact numbers of previous clients and detail of the work performed (visit the job).

1. Name _____ Contact Number _____

Project Name and Address _____

2. Name _____ Contact Number _____

Project Name and Address _____

3. Name _____ Contact Number _____

Project Name and Address _____

☐ Has the contractor visited the site and made himself familiar with the job?

☐ Is the contractor bonded? _____ What is the bonding capacity? \$ _____

☐ Is the contractor going to perform the repairs with his own forces or subcontract it out? Explain: _____

CHECKLIST NOTES:

Note 1 - “Cheap” contractors always undercut the competition by cutting corners. When corners are cut and there is a problem on the job, it is the owners who are left holding the bag. These contractors have a business plan, which is to bid very low on purpose in order to have the project awarded to them. Once they are on board, you cannot get rid of them because they already have the signed contract and as such, they will begin looking for reasons to start producing change orders. They make money on these change orders. As an Owner, this is very tough to contend with because of the difficulty of discerning whether a change order is legitimate or not. Whenever a contractor comes in with an unusually low bid, this should raise a red flag.

An experienced engineer will have already drafted a set of documents (the entire set of plans and Bid Documents) and forms that the contractor will review, fill out, and sign. These documents will attest to the contractor’s willingness and/or ability to comply with the requirements needed to become a viable bidder so that the owner can seriously consider their bid when it is submitted. Every good and experienced concrete repair engineer has these forms and tailors them to the requirements of each project as needed.

At this point, it is important to remember that you may have to already add your soft costs such as permitting costs, painting, extra security, tile work or waterproofing. Your engineer who has construction experience can assist you in developing your budget in the best way possible.

Study the bids, shortlist the contractors to two or three options and then take the time to interview them in person. Often, it is a great help and a viable asset to have one member on the Board and/or committee who has some construction experience.



Once you choose a contractor, it is advisable to hire an attorney to best protect your interest by guiding you through the contract process. As engineers, we cannot dispense legal advice since it is against Florida Statute to do so. Remember that your contract is the centerpiece of your project. The American Institute of Architects (or the AIA) has many templates available that are widely used in the industry and most contractors are familiar with. Your contractor may have their own contract and you may decide to use theirs. Bottom line: you have alternatives, but protecting yourself should be your first priority. 

STEP 6 – SUBMIT FOR PERMIT

The permitting process is the procedure where the CD’s (contract documents) are submitted to the City or County to attain a construction permit. It starts at the time your contractor gives the contract documents to the city and ends when they give you a permit. You’ve probably heard the horror stories about the permitting process here in South Florida and it takes an enormous amount of time to get things done. The fact is that having an experienced engineer on your side is critical in avoiding the typical problems you face when attempting to get a permit. In reality, the Building Department is your friend and typically is very helpful unless they realize that you are purposely going about it the wrong way or cutting corners.

For clarity, here is the permitting process in a nutshell: Your contractor takes the contract documents to the city where they will fill out a permit application and provide the city with a copy of their license and insurances. The plans then undergo a thorough review by the “structural reviewer”, who is the designated engineer at the city to review and approve the contractor’s permit application. Once submitted, it is out of the engineer and contractor’s hands. For smaller projects, the review process can take a couple of days. For more complex projects, the review process at the city can take a couple of weeks or even more. Items that can affect the time timeline of your permit include the following:



1. The engineer is not experienced and submits the plans and specifications that are not up to par with the Florida Building Code or City's standards.
2. The contractor submits the wrong information or omits certain documents.
3. The City is overwhelmed with work and the review process is stalled.
4. It is Christmas, summertime or any other time of year where reviewers tend to be on vacation or they are simply part-timers.
5. The contractor and/or the engineer do not follow up with the City to see if the plans are ready for pick-up after they have been reviewed and/or approved.

In the last 20-plus years, we at G.Batista Engineering & Construction have worked with every city in South Florida. We establish that crucial face-to-face contact with these reviewers in order to expedite the process and avoid misunderstandings during review and construction. 

STEP 7 – APPROVAL

After the permit is attained, the contractor can begin construction. This is not really a step, but a milestone. I have made this a step with the purpose of signaling the commencement of the job itself. Many contracts use this date as the official starting time of the job and it's also used to establish the tentative schedule for the remainder of the project. 



DID YOU KNOW?

On larger projects, it is strongly recommended to hire an "Owners Representative" who is a construction/engineering professional that looks out for the Owner's interests in addition to what an engineer does. Search Google for "What is an Owner's Representative" for more information.

STEP 8 – PERFORM THE REPAIRS AND CONSTRUCTION

Construction is by far the most difficult, time-consuming and stressful part of the entire process. Concrete repairs are not cheap and are very disruptive to those living in the building. After many years of doing this, I have learned that the best way to begin the process is for the landlords, owners, associations and/or condo boards to educate the residents on what concrete spalling is, the importance of repairing it and exactly what those repairs entail. This is the main reason I produced a video documentary of the process. This is an educational tool that, in addition to this guide, is also at your disposal. You can access this free 20 minute video documentary by visiting the website at: www.askgbatista.com

Realistically speaking, none of the information in this video will properly prepare you to deal with all the issues that can arise during the construction phase of the process. Every project is different and has its own unique set of challenges. This is where a good engineer that has the knowledge and experience to protect you comes in handy. The best engineer is one that not only has experience in engineering, but also in construction. Nevertheless, you should know the basics about the construction process that apply for the vast majority of concrete repair projects; that is what this next section is all about.

If the building to be repaired is a multi-unit residence, it is a very good idea to put something in writing and distribute it to all the unit owners and residents. It should read something like this:

SAMPLE LETTER TO RESIDENTS

South Beach Plaza Condominium

Dear Residents and Owners:

As you have probably noticed, there is a concrete problem in our building that must be repaired. Our engineers have advised us that if these items are not repaired quickly, the problem will become worse over time and eventually become a liability that risks injury and/or loss of life.

We are in the process of seeking and/or working with the appropriate professionals and want to let everyone at the (YOUR COMMUNITY NAME HERE) that there will be inconveniences while the work commences and progresses. These inconveniences will be in the form of chipping hammer noises, workers in the area, dumpsters in the parking lot, barricading for safety, among others. Although we would coordinate with these professionals to minimize the nuisance, the fact is that it will present some challenges. We currently estimate that the construction time will be from to but that can change due to the nature of the work and unforeseen conditions that can arise.

We are in the process of attaining a schedule of work. Currently, our plan will consist of starting the work at the pool area, then the garage, then commence the balcony repairs at line 1 and work towards line 20.

If you are not a resident, but have tenants, please make sure they are aware of the construction activities that are to come in the near future.

Thank you for your patience and understanding while we work to ensure your absolute safety and comfort. At the end, all we want is a safe and beautiful building for all to share.

Sincerely,

Mr. Association Board President

The sounds of chipping hammers, barricades, entrances blocked, the dust, the inconvenience, and of course, the COST.

The disadvantages are obvious but it is at these times especially when you need to look at the silver lining. After the repairs, your building will be a safer place to live, your property value could increase and the building will regain its aesthetic value.

During this construction process, you will rely heavily on your engineer to make sure things are done correctly in every aspect of the work. This depends on what specific services you've hired your engineer to perform such as inspector, and/or construction consultant, project manager, or owner's representative. Whatever the case may be, this is the basic run-down of how projects are typically set up in South Florida. Certain cities will be a little different, but the basics of the process hold true.

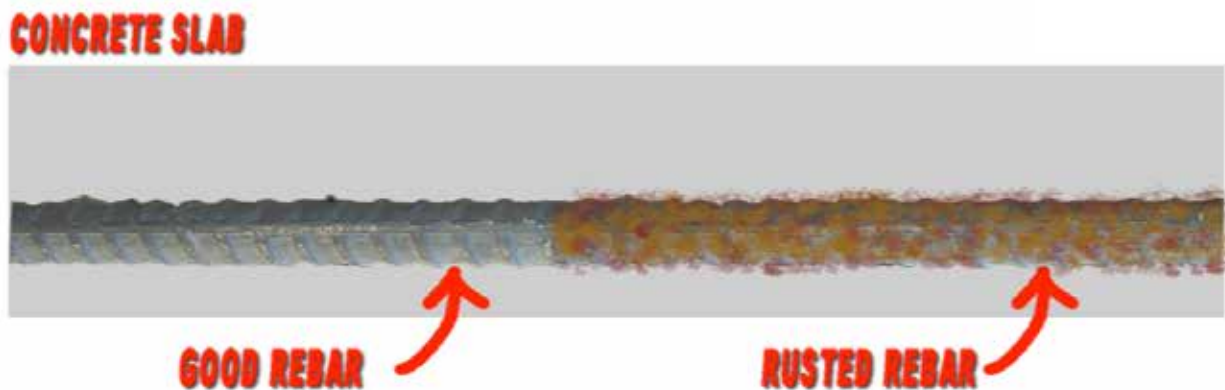
For example, your contractor is working on your building and the city is performing their inspections. The city relies heavily on the written inspection reports generated by your engineer upon each visit. When the city inspector shows up to the job, he will ask for these inspection reports from the engineer who, at times, is called a "special inspector." A "special inspector" is a person who is hired by the owner who will act as the project's inspector (in ADDITION to the city's inspections) that will sign

off on the project at the end by providing the city with a Signed & Sealed letter attesting that the project was performed in accordance with the Plans and Specifications. This "special inspector" is key because he makes sure that the job is done correctly. Most of the time, the engineer that you hired is the "special inspector" but that is not always the case. The owner has the right to hire a completely different engineer.

Before I get carried away in explaining about the inspection processes, you must understand that the concrete repairs require several steps that must be inspected. Your engineer (and/or the "special inspector") is the person who is responsible for monitoring the job and making sure everything is being done accurately. You see, concrete repairs are not just a quick "chip-out and patch". There is a very specific methodology for these repairs and strict quality control is required by the Special Inspector, as well as by the City and/or County Inspectors. It is the engineer's responsibility that this methodology is followed. There are certain basic and critical steps that must be taken for a proper concrete repair. The engineer must inspect each step along the way because at the end of the project, the city will require that the engineer certify the work was completed properly through a written Certification Letter. Let's take a look at the very basic repair process.

Here we show a concrete slab that has a corroded portion of rebar and a portion of rebar that is in pristine condition.

THE VERY BASIC REPAIR PROCESS



The process begins with a chipping hammer to remove enough concrete to expose as much as 6" of pristine rebar (as seen above). We call this "chasing" the rebar. The contractor must "chase" the rebar until there is as much as 6" of good rebar exposed. Your engineer will

tell the contractor where he must stop or if he needs to continue chasing the rebar even if that entails entering a residence. The 6" is a rule-of-thumb that many engineers follow. Some engineers may require more to be chipped and others will require less.

THE VERY BASIC REPAIR PROCESS



This is where a lot of problems begin. The engineer does not have X-Ray vision when they do their original quantification of damaged concrete. There is no way they can precisely foresee the exact amount of concrete that needs to be removed. The engineer goes primarily by judgment and experience to estimate this amount. It is only when the contractor takes a chipping hammer to the concrete that the exact amount that needs to be repaired can be assessed. This becomes a big problem because most contracts are based on a unit cost, such as \$100/sf of chipped concrete or \$60/LF of chipped concrete. If the corrosion is found to be worse than anticipated, your budget will be less reliable in terms of the bottom line. Hiring an experienced engineer and adding some contingency plans into the project are just a couple of things you can do to minimize the impact of possible overruns.

After the contractor "chases" the rebar, they proceed to clean the rusted rebar by any approved means like utilizing a wire wheel or sandblasting. Sometimes the rusting



has eaten away at so much of the rebar that it requires complete replacement (that's up to your engineer to determine). Bottom line: the more you wait to repair it, the more corrosion builds up and the more expensive the repair process gets.

Your contractor then paints the surface of the rebar with an anti-corrosive material to protect it from continued corrosion. These chemicals are expensive but they are applied in order to protect your repair investment.

THE VERY BASIC REPAIR PROCESS

CONCRETE SLAB



Finally, the contractor places stucco over the rebar and the repair is complete.

THE VERY BASIC REPAIR PROCESS

CONCRETE SLAB



The contractor chips out the concrete and an inspection takes place by the City and Special Inspector. Several inspections occur before your contractor is finally approved to cover up the rebar with stucco. Each and every time the engineer performs an inspection, the engineer must make a report approving (or disapproving) the work that has been performed. The contractor can cover up the concrete with stucco only if the aforementioned report by your engineer is completed and approved. As previously mentioned, the engineer generates a report that he will provide to the Building Official at the Building Department so they will be updated as to the progress of the project and then provides the final certification when the repairs are completed at the end of the project.

ONCE THE PROJECT IS COMPLETED

Once the repair process has been completed, there two often-overlooked items that should be noted:

1. The contractor must close out the permit and you must receive a document from the contractor stating this. Closing out the permit is a final step that the contractor must take. This action signals to the city that the project is officially over. If the contractor does not do this, the city will believe that the permit is still active and will be waiting for the contractor's call for inspections. As a result, the permit remains in limbo until someone at the Building Department notices and requires that you, as the owner, close it. By that time, the contractor is possibly unavailable or not interested in doing this since he has already been paid. There are all sorts of issues that surface if this last step is not taken with the presiding city. Ask the contractor to provide you with this closing document from the city prior to final payment.
2. Get a written warranty of the repairs with a start date and end date. The terms of the warranty should have been clarified at the beginning of the project in your contract.

You must educate your residents, have reputable professionals on board, as well as an acceptable contract set up with a decent contractor; this way, you are on the right path to making this entire process less painful than it otherwise could be. 📺

STEP 9 – MAINTENANCE

If your building is located in a coastal environment, concrete damage is a maintenance issue. Time and time again, I have seen residents and owners ignoring the telltale signs of spalling out of inexperience, denial, or both. The reality is that you don't have to be an engineer to know that you have a concrete problem. However, if it is ignored, it will become more serious and much more expensive to take care of. My personal recommendation is to have an inspection performed every one to five years to monitor the condition of your building and detect any issues early.

Now that you are familiar with the basics, I will now address costs. This is what everyone has on his or her mind, and for good reason. Concrete repairs can be very costly. This is the kind of issue that is best taken care of immediately after it is detected. The worst thing you can do is to kick the can down the road. It is ultimately a safety issue and absolutely must be done correctly by experienced professionals if you want to ensure the best possible outcome.

Repairs that are not performed by professionals only provide a cosmetic fix that will not get rid of the underlying corrosion that will only worsen over time.

In reality, your engineer can estimate the financial impact of your job after they do their quantification, but the actual cost will not be known until you get your contractor's bids. And even after getting your contractors bids, unforeseen conditions could render your initial budget obsolete. Your engineer is your ally in this quest for attaining the best guess at a budget .

That is why I wrote this guide and made a documentary video detailing the repair process. Here at G.Batista Engineering & Construction we are experienced professionals that know what it takes to ensure the successful outcome of our projects and it starts with becoming informed. We know that you as a Property Manager, Association, or Board, work hard to do right by the residents. We are here to help. Visit our website (www.askgbatista.com) to see our video documentary on Concrete Repair. 📺



DID YOU KNOW?

Concrete repair is not a one-time issue. It should be considered a maintenance matter to be followed-up on periodically.

HOW TO PREVENT CORROSION



The first defense against the corrosion of steel in concrete is the original contractor who built the project. For starters, this contractor should have used a proper concrete mix and poured a sufficient amount of concrete to cover the reinforcing bars. The basic definition of “concrete cover” is that the reinforcing steel should be “covered” by a certain amount of concrete and avoid being placed too close to the surface of the concrete. Reinforcing steel that is placed too close to the surface tends to rust faster than one that is not. Codes are in place (such as the ACI) so that contractors follow these rules to avoid the “burning” of the rebar close to the surface. Rebar that is less than $\frac{3}{4}$ ” from the surface is typically too close to the surface. A very basic rule of thumb is that 1.5 inches is used as a cover and it is increased in marine environments.

The quality of the concrete is also an important factor to preventing corrosion. Concrete with a water-to-cementitious material ratio (w/c) that is low enough to slow down the penetration of chloride salts and the development of carbonation is preferable. The w/c ratio should be less than 0.50 to slow the rate of carbonation and less than 0.40 to minimize chloride penetration. There are codes that provide limits on the maximum amount of soluble chlorides in the concrete mix.

Another ingredient for good quality concrete is air entrainment, which is basically microscopic air bubbles added to the concrete.

There are also additives in the concrete that reduce the permeability of the concrete such as silica fume, fly ash and blast furnace slag. Corrosion inhibitors, such as calcium nitrite, act to prevent corrosion in the presence of chloride ions. In all cases, they are added to quality concrete at w/c less than or equal to 0.45. Water repellents may reduce the permeation of moisture and chlorides to a limited extent. Other protection techniques include protective membranes, cathodic protection, epoxy-coated reinforcing bars and concrete sealers (if reapplied every four to five years).

As you can tell, this topic can be quite complex. You do not need to know these things, but your engineer should. Concrete corrosion prevention begins at the original design of the structure by way of the engineer specifying the right type of concrete before the building is actually built. It then transfers to the original contractor who is supposed to follow his design specifications by having a good quality control program in place. Ultimately, it falls upon the owners and residents of the building who must maintain thorough vigilance and repair spalling in a timely manner whenever it occurs. 

GREG BATISTA'S RESUME

I've been working with concrete for over 30 years on the design, inspection and construction side; it is my specialty. I've been a Licensed Professional Engineer since 1992 with over 30 years of experience in construction and design. I've been a General Contractor for over 30 years. I've been Director of the US mainland chapters of the largest Hispanic professional engineering association here in the states and I've been appointed by the County Commission to the Broward County Unsafe Structures Board. I am a member of the ACI (American Concrete Institute) and ICRI (International Concrete Repair Institute). I have a flawless reputation here in South Florida. Always make sure your engineer has the adequate qualifications and experience for the job. You can also go to LinkedIn and search for "Greg Batista" for my latest resume and references. You can also search for my company on Google and see the many reviews we have received. 

FRAUD IN THE CONCRETE REPAIR BUSINESS

To me this is the most difficult, and at the same time, most important chapter to write. One of the main reasons for writing this guide is to give prospective clients a tool to become as educated as possible on the process. Nothing is more effective against fraud than education. It is also written from an unbiased perspective as both a professional engineer and also as a contractor for any lay person to competently choose any engineer or any contractor and also be on their way to a relatively problem-free project.

Fraud in this industry comes in many forms. Let me illustrate just a few of the more common examples:

UNLICENSED ACTIVITY

Performing structural work without a proper contractor's license is a crime in Florida. Structural repairs are a very serious matter that cities, particularly those at the coastline, keep a watchful eye over. Improperly engineered and/or performed work could lead to serious property damage and potentially a loss of life. The State of Florida requires professionals to have a valid and active license. The mere fact that a person has a license means that the individual has complied with the requirements of obtaining one. Obtaining a license requires testing, experience, holding minimum insurance requirements, continued education and many other factors that are there to ensure that the public is protected by using a person that has demonstrated a minimum capacity and competence. This kind of fraud is easy to detect and overcome. Simply log on to the DBPR (Department of Business and Profession-

al Regulation of Florida) at www.myfloridalicense.com and click on "verify a license." This is a database that will let you know if your professional is licensed, the dates of expiration and even if there have been complaints filed in the past. You can practice by using my name "Greg Batista" to search for my license. It is a very simple process and goes a long way to protecting yourself.

It is not uncommon for a seemingly low-cost contractor to underbid the other more established companies. Why are these people much cheaper than others? The answer to this question may be because this contractor is more efficient and is very good at what they do. The answer could also be that the contractor is submitting a fraudulent bid that upon further investigation you find that they are using someone else's license or some other anomaly. Why should you care if they are using someone else's license?

1. The actual license holder may not know that this person is using his license to do this work.
2. You will probably be signing a contract with the person who submitted the proposal, but the person (or company) whose name is on the license is different. This can lead to major headaches and legal issues if and when something goes awry on the project.

This type of fraud is easy to uncover. The only thing you must do is to ensure that the construction company and the license holder are legally "linked." When I say "linked" I mean there are certain legal entities that can be linked and not be construed as a fraud. For example, my

concrete repair construction company's name is Real Estate Engineering, LLC, but the D/B/A is under G. Batista Engineering & Construction. If you look up my license information in myfloridalicense.com you should be able to trace it back to me, the President of the company Real Estate Engineering, LLC.

A few months ago, my client wanted me to interview a prospective bidder that had offered a very competitive price to perform the project. I called the contractor and asked him for his paperwork (license number, legal corporate name, and the names of the owners of the company and the name of the license holder). After digging deeper, I found that he was not only advertising himself as a contractor without a license, but the license that he was using to act as his "cover" was the license of a tile installer who knew nothing about concrete restoration. After notifying this tile installer that he is putting himself in a very precarious position just to help his supposed friend, I called the owner and told them to immediately remove this phony contractor's bid from the list. Either way, owners should make sure that they contact their engineer and/or attorney if they have any reservations about a company. If your engineer has already been hired to perform this analysis, then you should rely on your engineer's expertise to help you sort this important task out. As both a contractor and an engineer, I am extremely well-suited to assist you in this task. You should contact your attorney for any legal advice.

UNINSURED ACTIVITY

Insurance costs money and is required by law. Good contractors have it, while not-so-good contractors don't. Note that as a requirement to hold a contractor's license in Florida, you must maintain at least a minimum of General Liability Insurance. Some roundabout contractors somehow get third-parties to provide their insurance papers for them. Why should you care if they are using someone else's insurance?

1. They may be using that person's insurance without their knowledge which is fraud in and of itself.
2. The legal entity that you will be contracting with may not be "linked" to the legal entity that holds the insurance.

If someone gets hurt on the project (or there is property damage, etc.), then your legal woes as an owner will surely deepen since the insurance is not properly "linked" to the entity that you contracted with.

The good news is that this type of fraud is easy to uncover. You simply ask for the "insurance binder" from your contractor, which should be readily available. The "Insurance Binder" is a sheet of paper widely used in the industry that states the company name, the insurance carrier information, and the insurance limits in order to inform people such as yourself of the basic insurance information. You must then compare the legal entities on the binder to the legal entity on your contract and they should match.



DID YOU KNOW?

It is estimated that over 95% of concrete repair jobs go over the original budget due to many reasons. Hiring the right professionals is a must to minimize unnecessary overruns.

As a last note, cities will ask for proof of insurance, worker's compensation or licensure as a requirement to obtaining a permit. This does not automatically mean that you shouldn't do your homework. As well-intentioned as city employees may be, cities often do not have a copy of your contract to make sure that you are contracting with the same entities. Moreover, cities know that you are the one at risk if and when things take a turn for the worse in a project due to accidents or property damage. Bottom line: you or your hired professional must complete the important task of investigating the merits of the bidders.

BOARD MEMBERS, OWNERS AND PROPERTY MANAGERS "ON THE TAKE" FROM CONTRACTORS

They say that the "the love of money is the root of all evil." Money has a tendency to make perfectly rational, intelligent and otherwise honest people make some bad decisions. Larger concrete repair jobs often worth millions of dollars and the competition to acquire these jobs is often fierce. Every good contractor knows that the key to being awarded a project is through the people at the Board or those in the position to make the decision on which contractor to hire. Therefore, whatever influence they can exercise over these individuals provides an opening to bribery and fraud. One thing that surprised me about the

construction industry when I first started is just how widespread this activity actually is. Remember, I am both an engineer and a contractor and I travel in these circles more than my counterparts, so I am more exposed to these instances of unethical behavior. The concrete repair business in South Florida is a small world, so the stories are widely circulated. For example, X Company losing out on the job to a “connected” but less-qualified contractor because he had bribed one of the decision-makers is not uncommon. Even as an engineer, I have been approached on more than one occasion by brazen individuals asking for money in return for a favorable review towards certain contractors during the decision-making process.

This kind of fraud is more difficult to detect and, as such, people must use their intuition and creativity in unmasking these plans.

ENGINEER AND CONTRACTOR IN CAHOOTS

If you have read this guide from the beginning, you will have realized that the engineer is in a position to have a say over who will be hired to perform the actual concrete repair. The Owners, Property Managers and Board Members many times depend on the engineer’s judgment and experience to help them choose the right contractor for their particular job. Every good contractor knows this, and in turn, some attempt to bribe the engineers into persuading the Board to choose them. There are stories of engineers, Board members, and property managers that have faced stiff penalties and even jail time because they were in cahoots with the contractor. Your first line of defense in circumventing this problem is by not allowing your engineer to give you a list of contractors that you should consider extending bid invitations to. The Internet is a great tool to search for qualified contractors and so is the tried-and-true word of mouth reference.

I had been involved in a case in Broward County where I was called in to verify a contractor’s invoice where the owners had already hired an engineer. My first question was “is the original engineer aware of this, and why am I being approached?” The Owners were suspicious about the vast amount of repairs being billed to them and that it didn’t seem right. After having reviewed the contracts, paperwork and invoices, I suggested that my company check out some of the previously finished work in order to precisely quantify what had already been done to make sure that the total invoiced amount was accurate. Our investigation revealed that the contractor was indeed over-charging the owner because the quantities on his invoices substantially surpassed the actual amount of

work that was done. To make matters worse, the engineer on the project had approved these invoices prior to payment, and was later found to have received a kickback from the contractor for a percentage of the invoices.

This type of fraud is very difficult to uncover since your confidence is placed on your engineer to do the ethical thing. The best way to deal with this fraud is to have a third-party owner’s representative at hand who knows about construction. This “Owner’s Representative” can be a Board Member that has some construction background that can periodically check on the project. The “Owner’s Representative” can also be a hired professional although the budget will not allow hiring this person in most cases.

It is important to note that when hired as both an engineer and a contractor, my company always gives the owner the option of hiring any engineer of their choosing to provide a third-party inspection on our project. The inspection is free of charge since I will personally pay for it through a deduct change order to the contract. To me, this is the absolute best way to go about it and is my guarantee that the work is being performed correctly and is being invoiced accordingly.

The fact remains that the money that is “on the table” during the construction phase lends itself to corrupting even the apparently incorruptible professional engineers by the contractors.

BOARD MEMBERS, OWNERS AND PROPERTY MANAGERS “ON THE TAKE” FROM ENGINEERS

Honestly, I have never personally heard of any engineer bribing an Owner, Property Manager, nor Board Member in order to garner work. I assume that the reasons for this include the fact that the budgeted money for the engineering aspect of the job is significantly less than the contracting part. Another reason may be that the ethical standards for engineers are stricter than those of a contractor, and an engineer also has much more to lose in terms of their reputation and investment in their profession if they are caught. This does not necessarily mean this type of fraud does not happen.

While it pains me to write this chapter, it is necessary. Corruption and bribery are everywhere in our society and the purpose of this guide is to educate the reader and minimize the chances of a wrong turn. This is a profession that I truly love and often it is tainted by unscrupulous acts that eventually gives our industry a bad reputation based on the behavior of a small percentage. 

OTHER COMMON ISSUES YOU MAY RUN INTO



THE ACTUAL REPAIR WORK BEING PERFORMED EXCEEDS THE ENGINEER'S ORIGINAL ESTIMATE

As has been explained in the prior chapters, it is the engineer's job to estimate the amount of repairs to be performed. These quantities are the basis for the plans and specifications that will be submitted to the contractors for pricing and subsequently to the Building Department to obtain a Building Permit. Many times these estimates are exceeded and the Owner winds up paying the bill for the additional repairs. You must understand that quantifying concrete repairs is not like quantifying the square footage of tile to lay in your house. Your house has a fixed square footage that a contractor can price more accurately. They add in an amount for contingency and waste, and eventually come up with a price that they are expected to adhere to because these tile contracts are typically based on a "lump-sum" or fixed price. Concrete repairs, on the other

hand, are based on a quantity that the engineer identifies and it could very well be inaccurate. This is not necessarily the fault of the engineer. At times, the building's corrosion problem is more pervasive than anticipated. This problem will not come to the forefront until the contractor realizes that the corrosion has reached deeper into the concrete than originally anticipated once they start chipping away at the concrete. This type of problem tends to arise in much older buildings that have been neglected. This problem also tends to occur in buildings where well-intentioned, but unqualified people have performed repairs and only covered this issue without taking care to properly remove the steel corrosion. This steel corrosion continues to worsen under patch job until your current contractor uncovers it. What should have been a simple concrete repair back then is now a much larger problem in the present. 

DID YOU KNOW?

I pride myself in guiding my customers. It is my passion and the foundation of my success. If you need guidance on any topics dealing with engineering or construction relating to your building, just "Ask G. Batista".



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