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ABC Warehouse IV The Mysterious Retaining Wall Collapse

When Allen Brady first saw the property in late 1988, he fell in love with it. It was in a modern landscaped master planned industrial park in northwest San Fernando Valley. The site was ideal, but he was concerned that the eastern 75 feet was practically unusable. It sloped up sharply to the east property line where a chain link fence marked the beginning of the neighboring DEF Gasket Corporation's property.

The site was almost 10 acres, 802 feet wide and 510 feet deep, generally level, except for the east end, and some noticeably low spots. It was a perfect site for the 100,000 square foot warehouse Allen wanted to build and there would be plenty of space for offices and warehouse expansion. For the first time in the life of his company he would have enough space for truck parking and maneuvering and a decent loading dock.

In spite of his initial reservations about the 75 feet of unusable hilly space, he went ahead with his offer to purchase. After a lengthy exchange of offers and counter offers, his offer was ultimately accepted. He felt that at the finally negotiated price, he hadn't really paid very much for the sloping section.

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He'd heard about Judge & King, AIA, an architectural firm noted for outstanding modern efficient industrial buildings, always within the owner's budget. When he first met Ivor Judge and Leo King, he liked them and knew that he would get along with them, so he signed them up.

They discussed the sloping section of the property. Ivor felt initially that they had a large enough site to ignore the difficult 75 feet. But, as time progressed, ABC's program grew. So, they had to consider how to use at least part of the sloping section. They finally decided to erect a 12 foot high retaining wall, 300 feet long so they could extend the level site an additional 24 feet. They weighed the wall cost versus the site expansion advantages and decided to go ahead with it. They concluded it would be more economical to build the wall with the initial warehouse construction rather than as part of a future expansion program. Part of the retaining wall cost would be offset by using the excavated earth to fill and reclaim the low spots northerly of the first phase warehouse.

The selected development scheme placed the 5000 square foot office wing about 100 feet from the east property line. The 12 foot high retaining wall was about 50 feet from the office entrance. The intervening space was to be developed as an attractive entrance courtyard, with customer parking hidden by landscaping beyond.

Construction Nightmares

Above the retaining wall, the land angled upward on a 2:1 slope, rising 25 feet to the east property line. DEF Gasket's 8 foot high chain link fence was on the line with a 10 foot planting area adjacent and then their parking area. The sloping bank would be improved with suitable groundcover, trees, shrubbery, and an automatic sprinkler system.

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In one of their early design conferences, Ivor Judge discussed the retaining wall with his structural engineering consultant, Myles Nolan. They agreed that the wall would be constructed of concrete block masonry.

A few days later, Myles disclosed the details to Ivor. They would use smooth, lightweight concrete blocks in natural grey granite color. All masonry units would be 16 inches long by 8 inches high, nominal sizes. The vertical wall would be constructed of 2 rows of 8 inch thick concrete blocks for the first three courses, thereafter 12 inch thick blocks for the next 6 courses, and 8 inch thick blocks for the remaining 9 courses. The 18 courses would produce a total height of 12 feet above the footing.

The concrete footing would be 8 feet 4 inches wide and 16 inches thick. It would have a 16 inch by 16 inch concrete key on the bottom to help prevent the wall from sliding. The wall would be located 12 inches from the back of the footing with 6 feet of the footing in front of the wall. The concrete key would be directly under the stem wall.

The wall would be reinforced with deformed steel reinforcing bars sized in accordance with the engineering calculations. All cells would be grouted solid. The earth side of the wall would be dampproofed to minimize unsightly efflorescence on the face of the wall. There was no point in incurring the considerably higher cost of a full waterproofing treatment as it was not protecting a building interior.

Weep holes at 32 inches on center would be provided by omission of the head joint mortar at every other block in the first course. Continuous behind the wall at the line of the weep holes would be 2 cubic feet of gravel per lineal foot to allow any water in the soil behind the wall to flow horizontally and be released at the weep holes.

Ivor decided that the mortar joints would be concave tooled as this would yield a strong compacted joint and allow the blocks to be seen individually. The wall was carefully designed and the specifications would be quite thorough in respect to all the materials and workmanship including the concrete, steel, masonry units, mortar, and grout.

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The entire project was completed on time and within the budget on June 1, 1990. Allen Brady and all at ABC Warehouse Company were proud and elated.

During the next two years the landscaping flourished and the premises looked better every day. Fortunately their warehousing business was on a steady increase and they were making a neat profit, far better than Allen had ever dreamed.

Every time Allen looked at the space behind the customer parking area he felt that it would be a good idea to develop it as an executive parking area for his and the office employees' cars. He also dreamed of a beautiful landscaped park for his employees to eat their lunches on pleasant sunny days. He visualized a heavy timber

pergola with beautiful bougainvillea vines and maybe a few shade trees. He talked it over with his secretary, Teri Unger. She was enthusiastic about it and encouraged Allen to go ahead with the project. She asked, "Do you want me to call Ivor Judge to get the design started, Mister Brady?"

"No, Teri, there's no point in making a big deal out of this. We won't need any architects or engineers or contractors. They'd just make a simple project complicated. Besides, we'll save their fees. We can figure this out for ourselves."

"Are you sure, Mister Brady?"

"Sure. It's simple. Nothing to it. What could go wrong?"

He had Teri dig out the site plan from the Judge & King warehouse construction drawings and make a few copies on the office copier. It would be simple to lay out the parking area and the lunch park. He started sketching his visions on one of the copies and then asked, "Teri, what scale is this anyway?"

"I think it's one inch equals 40 feet, Mister Brady. That's what it says under the drawing. Just get a ruler and you can work it out. A half inch would be 20 feet and so on."

"Oh. That's a good idea. Do you have a ruler in your desk, Teri?"

After working with the site plan and the ruler for about a half hour, he called Teri back into his office. "I think this drawing is too small. It's hard to see the detail. How can we enlarge it?"

Teri suggested, "If you just redraw it, doubling all the distances with the ruler, it ought to be okay, I think."

"Teri, I've got to leave for an appointment right now. Do you think you could do the enlargement?"

"Sure, Mister Brady, it'll be fun." She doubled the drawing in a couple of hours and made some copies so Allen could continue his layouts.

The next morning Teri showed him the enlarged drawing and he was duly impressed. So, between them, they designed the parking area for 8 cars and a lunch park. It had a patio and pergola, planting areas, grass, shade trees, drinking fountain, and 2 concrete ping pong tables. When it was completed they would furnish it with a couple of picnic tables and some redwood benches. The drawing was a masterpiece, with different colors for each of the elements. They were proud of their work and posted it on the coffee room wall. It was admired by all in the office.

Allen happened to see a landscape contractor working in the vicinity and stopped to talk with him. He was installing a concrete walk and preparing planting beds at a nearby plastic molding factory. Allen asked him, "Are you interested in submitting a bid for some landscape work?"

"Sure!"

"Can you figure it all out from a drawing?"

"No problem. When can I see it?"

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Allen gave him directions for finding ABC and left. So, Leonard Martinez, Landscape Contractor, came by to see the drawings. He pointed out a few omissions on the drawings, such as irrigation sprinklers and lighting, and submitted an overall bid to build the whole thing including all hardscape and landscaping. At first, the price seemed very high to Allen and Teri, but after much discussion and a few concessions offered by Leonard, they agreed on a final price of \$31,200.

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After several weeks' use of the new parking and alfresco lunching facilities, Allen sensed a discordant visual note. He invited Teri out in the park to have another look. He asked, "Teri, everything's beautiful except for that ugly concrete block retaining wall. What do you think?"

"I think you're right, Mister Brady! It's horrid. It detracts from the beauty of the park. It should be painted. A restful soft mauve would be lovely."

Allen agreed, "A simple paint job shouldn't cost too much. I'll contact a painting contractor right away."

When he got back to his desk Allen remembered a young painting contractor that had been in recently soliciting maintenance painting. He rummaged around in his desk and found the business card. He asked Teri to call him and arrange for him to come in and submit a bid on painting the wall. "And ask him to bring in some paint sample charts so we can pick the color."

"Yes, Mister Brady!" Teri got right on it. First thing the next morning an eager Nels Olson was waiting in the parking lot for someone to show up. A little later when Allen arrived he couldn't help noticing the blue 1979 Chevy pickup truck splattered with various colors of paint. Its roof rack was piled high with ladders. The pickup was loaded with paint cans, brushes, rollers, and drop cloths. All the trappings of a veteran painter ready for action.

Allen showed him the concrete block wall and invited him in to the office. They went to the coffee room to discuss the bid over a cup of coffee. Nels was eager for the job as he had his eye on the future maintenance painting at ABC. He left some paint color charts and said he would go out and measure the wall and prepare a bid. In less than a half hour he was back with a handwritten bid which he left with Teri. She told him they would call him to let him know if he had the job. Teri studied the proposal: "Paint 300 foot long concrete block wall, 12 feet high. Surface preparation, one undercoat, and one finish color coat. \$1750. Payable \$600 in advance and the balance on completion."

She went into Allen's office and showed him the bid. Allen thought it was a little high and suggested that Teri get a couple more proposals. She obtained two more bids from painters she found in the yellow pages. They were both over \$2000. So she and Allen concluded that Nels really wanted the job. Allen instructed Teri to call Nels and get him started on the wall. Nels said, "I'll be there first thing tomorrow morning!"

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Allen and Teri went out together to see how Nels was getting set up. He'd parked his truck in the executive parking area so it'd be conveniently close to the work. The truck doors and tail gate had the same message as Nels' business card:

NELS OLSON
Painting Contractor
Licensed, Bonded, Insured
C-33, License # 564728

This gave Allen a warm feeling of confidence in his painting contractor. "Look, Teri, licensed, bonded, and insured. He must be okay!"

Nels explained to them that the job would take three days. The first day was the most important and would be devoted to surface preparation. The second day would be for application of the undercoat while the final color coat would be applied on the third day.

Nels and his two painters were industriously preparing the surface for the undercoat. They were knocking off the high spots caused by mortar droppings and filling in the chipped blocks and other surface defects with a portland cement and sand filler. Nels explained that this would produce a more perfect job. "For the undercoat we'll use a heavy sand-enriched coat to fill in minor imperfections. Then we'll finish with a heavy-bodied color coat. Allen and Teri were impressed. Teri enthused, "He seems to know what he's doing."

Allen said. "Yeah, I agree. Teri, give Nels our color selection."

She handed Nels the paint color chart with their selection boldly circled: 6673 Heavenly Lilac. It was a subtle pastel rosebud mauve. Teri had picked the color. She was thrilled when she visualized the result. She visited the job at least six times a day to confer with Nels and to make suggestions for improvement and refinement.

When the painting was completed, ABC employees agreed that Allen and Teri had made a fantastic color selection and that Nels had done an outstanding job. Allen promptly approved his check and promised Nels that he'd be first in line for ABC's maintenance painting.

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About four months later, in February 1993, Southern California had several days of heavy rains. Early on a Monday morning, Carl Daly was the first to arrive to get the warehouse opened and ready for the day's activity.

As he drove onto the property, heading for the new executive parking area, he was suddenly shocked by the utter disarray. He expected to see the elegant lush landscaping on his right, backed up by the tasteful mauve retaining wall and landscaped bank, surmounted by DEF's tree-lined parking area. The new office building would be on his left. He stopped the car to allow his senses to adjust to the astonishing sight of destruction laid out before him. His bruised senses were unable to grasp the enormity of the disaster. He had difficulty in comprehending what could have happened. The mauve retaining wall was missing. The landscaped bank was gone and all of its greenery was mixed up in the all-pervasive brown mud. ABC's customer parking and the new lunch park were covered in several feet of mud and rocks. The east side of ABC's offices had stopped the mud flow and the water saturated soil was two to three feet up the wall sealing the front doors closed. Mud was oozing down the driveway into the street. He couldn't see back to the executive parking area. He was aghast and overwhelmed with the immensity of this unexplained catastrophe.

He gathered his senses, backed his car out into the street, drove down to the truck entrance, and reentered the property. He stood unsteadily by his car and waited until a few more warehouse employees arrived. He stationed one at the office parking entrance to divert cars to the warehouse parking area. He directed two more to erect a barricade to keep cars out of the disaster area. He then drove around to the north side of the warehouse to the employees' parking area. He parked and opened the rear entrance to the warehouse. He walked through the warehouse to the door leading to the office building. When he reached his office he sat down to figure out what to do next.

Others started to arrive for work and found Carl in a catatonic state. He didn't know what to do. Teri suggested calling George Hyde of Hyde Construction Company. "He's a practical man. He'll know what to do." Carl said okay, so she dialed his number. He was on the scene within half an hour. Meanwhile, the office employees, gradually arriving, were mostly drinking coffee, talking in funereal tones, and looking out the windows at this incredible sight. No one could think of working.

When George Hyde arrived, he suggested notifying their easterly neighbor, DEF Gasket, at the top of the bank to forestall any further damage or injury. The mudslide had slid out from under part of their parking lot paving. Their chain link fence was suspended in mid-air. Luckily no cars had been parked up there. Teri called her counterpart at DEF and relayed the warning that their parking area was in danger of collapse. The DEF president, David Flynn, directed his plant manager to set some barricades and immediately called his attorney and insurance broker.

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Allen and his sales manager, Vernon Williams, were in Denver trying to sew up a new piece of business at Star Manufacturing. He was upset with Teri when he received a call at Star, as he had told her not to call under any circumstances unless it was extremely urgent. He picked up the phone apprehensively, "Hello. Allen here."

Teri said, "I've got bad news, Mister Brady." He steeled himself as she unloaded all she knew at the moment. Allen dropped everything and rushed home leaving Vernon to finish selling the deal.

Allen and Vern had left their cars parked in the ABC executive parking lot when they flew to Denver, so Allen had to take a taxi from the Hollywood-Burbank Airport. When he arrived at ABC, he was astounded at the chaotic appearance of the property that was so perfect only a few hours ago when he and Vern had left for Denver. It was far worse than Teri had described in her phone call. Everything in sight was the drab color of mud. He made his way through the warehouse and into the offices where he found Carl in a state of shock and inaction. Teri had taken responsible charge. She greeted him and quickly brought him up to speed, "We just discovered some more bad news, Mister Brady! Your and Vern's cars are under the retaining wall. George Hyde says he saw portions of them sticking out of the mud. We don't know if any other cars are under there or not! Mister Hyde is still outside probing around!"

Allen went outside to talk with George Hyde. He found George climbing around in the mud and walked over to join him. Allen was ruining his suit and shoes but ignored them. When he caught up with the builder, he could no longer suppress his anger. "Look at this fantastic mess, George! Your wall collapsed. You've ruined us! What did your guys leave out? I expect you to do the honorable thing and clean up this mess and rebuild the wall. You also owe us two expensive cars and a landscaped park. How could you do this to us? While you're at it, you might also think about restoring DEF's property to the way it was."

"Like hell, we will! You must be outta your mind! It wasn't our fault. We followed the plans and specs to the letter. There must've been something wrong with the design." George, irate, stalked off with no further comment, stamping the mud off his feet before getting into his car.

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George Hyde, back at his office, immediately started marshalling his advisors. His insurance broker, his attorney, his cost estimator, and Ezra Field, his superintendent on the ABC Warehouse job.

George didn't know why the wall collapsed. The only thing he was sure of was that Hyde Construction had followed the plans. They always did. He also called his masonry subcontractor who had actually built the wall, Harvey Irwin. Harvey, Inc had built dozens of masonry structures for Hyde and they always did an honest skillful job. Maybe Harvey could figure out what went wrong.

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Allen went back into his office to confer with Carl, who was useless, and Teri. Teri'd been keeping notes. They decided to call ABC's insurance broker, Brian Cullen, who told them he'd immediately notify their insurance carriers. "I'm fairly certain we have coverage on this but I won't know for sure until we know exactly what happened and what caused it."

Allen, concerned, asked, "Brian, are you saying we might not have coverage?"

"No, Allen. I'm saying we don't know yet. Keep me informed."

Allen, visibly shaken, directed, "Teri, get our lawyer Phil Quinn on the line. He'll know what to do."

Allen explained, "Phil, we have an absolute catastrophe here. Our property's ruined." He described as best he could the present sorry state of the situation and concluded with, "Brian Cullen isn't sure we have insurance coverage. Can you get over here right away?"

"Okay, Allen. I'll drop everything and run right over!"

They also called their architect, Ivor Judge, of Judge and King, and he in turn phoned their structural engineering consultant, Myles Nolan. Ivor and Myles were on the site shortly and were trying to piece together what could possibly have caused this terrible catastrophe. They waved to Phil Quinn when he drove onto the property.

Phi went directly into the office and greeted Allen with suitable expressions of shock, dismay, and empathy. He offered to put all involved parties on notice. He recommended that they get Hyde Construction to start cleaning up and have everyone with any suspected liability invited to observe the clean-up operation. He advised that it would be best to clean it up, limiting any further damage, determine the costs of reconstruction, find out who is at fault, research insurance coverage, and then make appropriate claims. He suggested having Frank Grimm, an independent forensic architect, on hand to make sure that the true cause of the collapse is positively determined, and a photographic record made.

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Allen asked Phil and Ivor to sit in on a meeting with George Hyde to negotiate a contract for cleaning up the premises. A glowering George Hyde immediately made his position abundantly clear. He'd assume no responsibility whatsoever for the wall failure and the resultant damage. He was willing to organize the cleanup work but would not quote an estimate or guarantee a maximum price. He'd proceed only on the basis of cost plus a percentage fee with payment in full, without retention, on completion and rendering of the final bill. This was his non-negotiable position.

Allen invited George to leave the room for a few minutes so he could confer privately with Phil and Ivor. When George left, Ivor said, "No knowledgeable contractor would give you any better deal."

Phil, agreeing, said, "George has always treated you fairly in the past, Allen. Under these conditions we need someone we can trust. I think you should go ahead with him."

Allen said, "But what if his people caused the problem in the first place?"

Phil replied, "That's why I want Frank Grimm present all during the uncovering and cleanup operation."

Allen called George back into the office and told him to go ahead with the cleanup. A contract reflecting his required terms would be signed.

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Hyde Construction was hard at work early the following morning. They had trucks and loaders to scoop up the mass of ooze and muck mixed with landscaping, lighting conduits, and sprinkler piping. They had deactivated all water and electrical services in the troubled area. Ezra Field, after conferring with Ivor and Myles, decided to get rid of the mud and not reuse it in the final backfilling, as it would take too long to dry out. He found a place to dump it that was only 8 miles away. George negotiated a favourable price for dumping it.

Hyde's earthwork subcontractor estimated that about 3200 cubic yards would have to be hauled away in addition to the masonry wall structure. They started removing the saturated earth and uncovering the ruined wall. The wall was so well constructed and reinforced that it did not break off at the footing as had been originally supposed. They found that the wall had slipped horizontally in some places and, where sliding did not occur, the stem wall was deflected and deformed. Nothing was salvageable.

It seemed at times that there were more observers of the cleanup operation than there were workers. Ezra Field was in constant attendance and in charge of the work for Hyde Construction. George was on the job parts of every day but could accomplish more in the office. Allen came out of his office several times a day to talk to whoever was in attendance but mostly he just stood around with a great lump in his throat.

Ivor and Myles, as architect and engineer of record, were there every morning. They had a keen interest in knowing how the failure occurred and whether there had been any shortcomings in their own professional services. They'd already been over the engineering calculations, drawings, and specifications a dozen times. They'd also pored over their construction observation reports and could not figure out what had gone wrong. They suspected the heavy rain and mud but knew that the design had anticipated such conditions.

Harvey Irwin, the masonry contractor, and his field superintendent, came to look a few times as they were under a certain amount of suspicion as the builders of the wall for Hyde Construction. They looked nervous and never stayed long.

Ivor had asked Larry Martin, Engineering Geologist with Lawson-Martin, Geotechnical Consultants, to drop by to get the flavor of the situation as he would be asked to help design the reconstruction of the failed earth bank.

Phil had asked Frank Grimm, the forensic architect, to observe the cleanup operation, take photographs from time to time, and to determine if possible the cause of the failure so that the culpable parties could be identified. Frank spent three to four hours a day observing the operation, making notes, and taking photographs.

At one time the design architect and engineer, the soil engineer, and the forensic architect were there simultaneously. After much discussion, analysis, and speculation, they agreed that the wall should not have failed, that the soil was not draining for some inexplicable reason. Allen Brady didn't understand most of their arcane technical discussion.

When the muddy soil was removed and more of the wall could be seen, remnants of the weep hole gravel could be seen and it seemed sufficient in quantity and properly located. It wasn't until the wall was being broken up with pneumatic jack hammers that Frank noticed that there were no weep holes. This was enough to explain the collapse, he said.

Myles, puzzled, said, "I know there were weep holes. They were on the design drawings and I saw them in place. I've some construction progress photographs in the file back at the office. I'm sure they'd show!"

Just then George Hyde and Harvey Irwin arrived and joined the architects and engineers examining the section of wall with no weep holes.

Harvey said, "This is weird. I know we built the weep holes. Now they're gone. I laid them out myself. We specifically cleaned them out before the gravel backfill was placed.

Hyde said, "Sure, I saw the weep holes myself."

Allen heard all of this discussion and quietly left. He went into his office to think about what he'd heard.

Hyde Construction finished the wall demolition and cleanup. They had to break up the wall and footings with jackhammers and cut the steel with welding torches. The two expensive new cars were total write-offs. They were loaded and hauled away by an auto salvage company. None of the landscaping remained. The picnic tables and benches, ping pong tables, and pergola were all smashed and ruined and had to be junked. The trees, ground cover, and shrubbery were not reusable. The parking area paving was ruined by the heavy duty wrecking and trucking operations. Altogether it took two weeks to get everything trucked away and get down to a clean site restarting point.

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Allen hired Ivor and Myles to redesign the retaining wall, parking area, lunch park, and landscaping and obtain the proper building permits. They also had to seek recommendations from Larry Martin for the reconstruction of ABC's damaged bank. Martin had confirmed that the muddy soil couldn't have been reused for backfill or reconstruction of the bank. Hyde Construction rebuilt the concrete block retaining wall, park and lunch area, the executive parking area, and restored DEF's chain link fence and parking area. George made arrangements with Leonard Martinez to replace all the landscaping features and the irrigation system. It took another 6 weeks to restore the entire premises to its former glorious state of tranquil beauty and perfection.

A few days after completion of reconstruction, Hyde came in to the ABC office and presented an itemized bill to Allen Brady in the amount of \$217,900. After George left and Allen had recovered from the shock, he phoned Philip Quinn to come in to talk over the situation. Phil suggested that Allen also invite Ivor, Myles, and George. Phil said he would have Frank Grimm present.

At the meeting in Allen's office, Allen led off with, "Someone will have to pay for this." He had Hyde Construction's bill on the desk before him. He was clearly outraged. Ivor and George exchanged glances.

He continued, "The wall must have been improperly constructed or it wouldn't have collapsed. Any fool can see that!"

George, not one to be lectured to, again vociferously clarified his position, "We followed the plans and specifications exactly. We installed every piece of steel specified. The building inspector saw to that. Also, Judge and Nolan carefully observed our work and must've been satisfied that we followed the plans and specifications. Otherwise they'd have said something at the time. We saved all of Judge's jobsite observation reports. They said nothing negative about our construction of that wall."

Allen, seeing the logic of George's remarks, turned to Ivor and Myles and said: "Then there must have been something wrong with the structural design of the wall! Nobody else's wall collapsed! Just mine! Properly designed walls don't just suddenly collapse."

Myles started explaining, "It's standard engineering practice to design retaining walls to support drained earth. In the design we provided for weep holes every 32 inches. The weep holes were in the form of mortarless head joints 5/8 inch wide by 8 1/2 inches high, the full depth of the wall. Behind the weep holes was two cubic feet of gravel per lineal foot so the water could readily migrate horizontally and drain out the weep holes, thereby preventing the earth from becoming saturated. It's a standard way of designing retaining walls in this region. Based on the assumption of drained earth on a surcharged bank, we treat the soil pressure as if it were a hypothetical liquid with an assumed weight of 43 pounds per cubic foot. The actual weight of saturated earth would be over 100 pounds per cubic foot. That kind of increased soil pressure load could easily collapse the wall. And that's what we believe actually happened."

Allen said, "Well, why didn't you design it for the load imposed by saturated earth? Then we wouldn't have this mess today?"

Myles chimed in, "The cost would have been considerably higher. We avoided that substantial extra cost by designing in weep holes that are, for all practical purposes, free."

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Phil looked questioningly at Frank who confirmed that Myles' explanation was correct. Frank said, "I have my preliminary report here. Complete with photographs. Someone has filled in all the weep holes with cement mortar and that is why the wall failed."

Allen quietly concluded, "Our painter must have filled in the weep holes."

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The next day Allen and Phil met with Nels Olson. Phil asked him if he had filled in the weep holes. Nels proudly admitted, "Yes, that is what I was paid to do. I always do an honest proper job."

Phil and Allen exchanged serious glances. Phil requested, "Allen, will you please ask your secretary to come in here to take some notes?" Allen called in Teri who sat next to Nels.

Phil then re-asked the question. "Nels, you just told us that you filled in the weep holes in the concrete block wall. Is this true?"

"Yes, with portland cement and sand mortar. There's nothing better. That's the right way to do it."

Teri backed him up, interjecting, "Well, naturally. Those unsightly holes that Hyde Construction left all along the base of the wall had to be filled. I told Nels he ought to do it. He didn't charge any extra. He said he'd throw it in gratis as he expected to get all our future maintenance painting." Nels was smiling and nodding, relieved that the secretary was corroborating his account. Teri was glad to help.

Phil and Allen exchanged horrified glances.

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Moral: Contractors should always be carefully selected and even seemingly simple contracting scenarios require some skill in administration. As it turned out in this apocryphal tale, the contractor that was licensed, bonded, and insured had the statutory \$7,500 state license bond and his insurance was a \$5,000/\$10,000 public liability policy on the blue 1979 Chevy pickup truck. He had little, if any, other assets.