Introduction

The Eldorado Community Improvement Association (ECIA) owns a 120,000 gallon pool, a 2,800 gallon wading pool and associated buildings located at 1 La Hacienda Loop in Santa Fe, NM 87507. PoolPro LLC engaged several firms to evaluate the buildings, pool, deck and barrier for the facility. ECIA requests a comparison of costs to repair the existing system/s or replacing it with new construction. We also evaluated the facility for ADA compliance, surface water drainage, policies and amenities. The swimming pool ad hoc committee also asked about programming and guarding policy. There are also some questions regarding improvements in customer service at the facility.

Methods

Each company employed evaluation practices based on their trade, as mentioned in the “Inspections” section. The engineer’s evaluations are provided in the appendices. Pressure testing was done at 15 psi for 30 minutes. Bonding was tested with a meger and ohm meter. A core sample of the pool crushed by compression to measure its relative strength in pounds per square inch (psi).

Additional Purpose

The swimming pool ad hoc committee also asked PoolPro to look at the near drowning incident that occurred in 2014 and drowning prevention. They discussed amenities like a rock wall and jump board. They asked us to look at policies and make a note about shade structures.

Description

The pool and wading pool facility was built in Santa Fe County in the 1970’s. The county assessor’s office and the office of land use do not have records extending back far enough to indicate the time of construction. The Santa Fe New Mexican’s archive does mention the community pool in 1972. It is unclear if the pool was built, or to be built from the article. The pool is 120,000 gallons and the wading pool is 2,800 gallons. The pool turns over in 6 hours at 323 gpm. The wading pool’s minimum flow rate is 46 gpm for a one-hour turnover rate. Flow velocities are correct for the time of construction at 4.4 fps on the suction and 9 fps for the
return. If these pools where to be built today, the vessels and relevant appurtenances would be $1.75 million to $2.25 million. Calculations for the volume of water in gallons are:

\[75 \times 40 \times 4 \times 7.5 = 90,000 \text{ gallons} + 20 \times 22 \times 8 \times 7.5 = 26,400 \text{ gallons} = 116,400 \text{ gallons} \]
\[25 \times 15 \times 1 \times 7.5 = 2,812.50 \text{ gallons} \]

Inspections

The grounds and vegetation surrounding the facility are not causing damage to the wall, deck or pool. There is speculation about whether the trees in the southeast corner are or could cause damage to the facility. Our environmentalist says that cottonwoods are no problem, but Russian or Siberian Elms could be. Our structural engineer has indicated he does not see any problems at the facility in this area. The leach field from the backwash holding tank is not working effectively and its placement is unknown. This is still a piece of information that needs to be investigated. See attached document provided to us by Juan Sanchez for additional information and full report on the Environmental Impact Opinion for Eldorado Community Improvement Pool Facility.

The structural engineer also inspected the deck and perimeter fence. His assessment is that sections of the deck should be replaced. We broke two bad pieces of deck out for assessment of the shell and the deck was brittle and came apart easily. The pool shell is in very good condition. We looked at the back wall and plaster surface. The water line is level in the center of the tile and no unusual settling is occurring. The core came out as a solid piece and it’s compression was tested at 9130 psi, see attached document provided to us by GeoTest for report regarding the core sample. See attached documents provided to us by Carlos Gallegos with Criterium Engineers for additional information and full reports on the structural inspection.

The skimmers around the perimeter are cracked and need to be replaced. The main pool plumbing is in good repair except in the pump room. The inlet piping to the pump room has cracked flanges that need to be replaced. The floor of the pump pit needs attention too. The filters are from 2008 and were recently serviced. The filters are fiberglass and have an approximate 20 years of useful life left. The pool boiler is nearing the end of its expected life for main pool. The chemical feed and control system has working components but needs electrical infrastructure, training and some back up parts. The return line to the pool pressure tested ok and all directional eyeballs exist intact. The skimmers in the wading pool are in good condition. The wading pool suction plumbing does not hold pressure. The plaster is in good condition. Although, there is anecdotal evidence of the aggregate surface cutting the kids toes. The recirculation pump is newer. The filter was replaced in 2013. The boiler is new for the wading pool. Return piping tested good. See attached document provided to us by David Kenney for additional information and full report.

The electrical bonding system for this pool is not functioning adequately. We have several differing readings of resistance that should not exist including a hand rail, circulation
pump and heater. This condition is repairable, it needs to be done and should be completed by the 2019 season regardless of the direction the ECIA board takes regarding the pool. See the report from Henry Sena with Alive Electric for the erratic readings.

The electrical system needs upgrades. Essentially, all components are at or past their usable life and replacement is required. The service does have some room for small upgrades. Most of that capacity will be used to provide adequate service to the wading pool pump room and lifeguard shack. See attached document provided to us by Jeff Stone for additional information and full report.

The buildings are in good shape. The bathrooms are not ADA compliant and look outdated. They don’t meet current code for number of fixtures. The entry landings are not ADA compliant although the ramp’s rise and runs are. The wading pool pump room shack has a roof leak at the boiler penetration and needs to be replaced. The lifeguard shack is also in good condition. One shade structure requires additional reinforcement or replacement. The guard area also needs more power to supply the devices in use.

Summary

The pool is of adequate size and structural integrity to meet the needs of the community for twenty or more years. Cost to raze the existing complex and replace it with an identical facility that meets today’s health code and ADA requirements would be $3 million. Cost to operate the existing facility in today’s costs are going to be near $50,000 annually. This value is a mean as it is inflated today but would be short at the end of a couple decades. Cost takes into account periodic replacement of pieces of equipment that have large capital costs and are spread out over time (i.e. plaster, heater, etc.).

We do not concur with the structural engineer about preserving the deck and making repairs. In consideration of how easily the removed slabs of concrete broke and that the skimmers need to be replaced, we recommend full replacement. This is conducive to providing a better ADA access to the bath house removing birdbaths around the perimeter and providing better drainage of the deck for water control. This cost does not include the required upgrades to continue operations now (i.e. deck, skimmers, electrical, and entryway water control). The estimate for deck replacement, modifications to the east end parking lot for drainage and ADA access, bonding and electrical upgrades and repairs is $200,000 to $250,000 (price excludes upgrades to bath house due to the variable options for improvements).

Cost for commercial construction for the bath house can range from $125 to any value per square foot. Using online calculators for an eleven hundred square foot “community center”, a cost of $140,000 is estimated. This would be basic construction. More cost would be incurred depending on fixture quality, design and desire. Cost also excludes additions that may be desired for storage or chemical handling spaces.
We did not interview any persons regarding the near drowning at the pool that we understand was in 2014. Several stories indicate that the pool staff discipline is not as strict as it has been in the past. Lifeguarding is a profession. Hiring high school and college students who have been trained is typical for most facilities in the country. The rescue training is completed by several agencies whose instructors are certified from national organizations. Successful participants learn the minimum standards required to be granted the certification. To ensure Lifeguards adhere to such standards we recommend constant supervision, periodic in-service and operational training. It would be typical for staff at facilities like ECIA to have customer service training, facility cleaning, maintenance training and emergency action training.

Controlling water runoff from the parking lot through the entry way is a large concern and should be addressed in a master plan to get control of the natural water moving across the parking lot. Amenities are typically easy to provide and install based on the mission that ECIA wants to define. Jump boards, rock-walls and rope swings are some of the amenities to consider for installation, but conferencing with your insurance carrier is important to get a good understanding of the actual costs involved. A townhall approach to help define the direction the facility should take would be our counsel for proceeding to develop a master plan.
November 15, 2018
Pool Pro
2440 Alamo Ave
Suite 108
Albuquerque, NM 87106
Job No.:3-81118

REPORT OF CONCRETE CORE SPECIMENS

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<th>PROJECT:</th>
<th>Eldorado Community Improvements (Santa Fe)</th>
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</tr>
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</table>

Respectfully Submitted:

GEO-TEST, INC.

David Olsen, Supervising Laboratory Tech

c: office@poolprollc.com
Environmental Impact Opinion for Eldorado Community Improvement Pool Facility

Report provided by:
Juan Sanchez III
60 Orchard Rd
Belen, NM 87002

Provided to:
PoolPro LLC
2440 Alamo Ave SE #108
Albuquerque, NM 87106
Environmental Impact Opinion for Eldorado Community Improvement Pool Facility

**Background:**
- Location: 1 Hacienda Loop, Santa Fe, NM 87508;
- Latitude: 35°32’54.72”N
- Longitude: 105°54”7.03”W
- Perimeter: 533ft
- Area: 13,656 square feet

**Runoff:**
Santa Fe receives an average of 14.21 inches of rainfall and 22 inches of snowfall annually (~2.2 inches of liquid water). Totalling ~16.41 inches of liquid precipitation annually. Therefore the facility will receive ~130,000 gallons of liquid precipitation on its surface areas annually.

Cite: U.S. Climate data

The following image of the facility clearly shows that the runoff from the pool has created vegetation growth of native grasses with a >90% vegetation coverage rate, reaching out to as far as 25 feet. Other similar undisrupted areas have a vegetation cover of <80%.
Opinion:
Being that there is a higher concentration of vegetation along the facility than there is in similar undisrupted areas, it can be assumed that the facility is not creating any negative impacts regarding vegetation or erosion from water runoff. The pool has created the same increased vegetation phenomenon that we see along the highway, without the negative effects of the heavy metals in the roadsides instance. Being that the steady infiltration rate, and runoff has created this highly vegetated surrounding, we feel confident saying that the Pool Facility at the Eldorado Community Improvement Center provides no negative impacts on its surrounding environment in regards to water drainage or landscape vegetation.
LIMITED
STRUCTURAL INSPECTION

1 Hacienda Loop
El Dorado, NM 87508

Prepared for:

PoolPro LLC
NM

Prepared by:

Criterium Building Inspection Engineers
4801 Lang Ave NE, Suite 110
Albuquerque, NM 87109
(505) 271-1341

10/29/2018

Inspection No. 21810012c
Date of Inspection: 10/25/2018
Engineer: Carlos Gallegos
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INTRODUCTION

At your request, a structural inspection of the pool area was performed on 10/25/2018. The report that follows has been prepared based on that inspection. This inspection was performed by and report written by Carlos Gallegos, Field Engineer.

PURPOSE AND STANDARDS

The purpose of the inspection was to determine the general structural condition of the pool concrete surface and pool concrete deck in order to assist in determining a course of action for repair and/or replacement.

This inspection report is limited to observations made from visual evidence. No destructive or invasive testing was performed. The report is not to be considered a guarantee of condition and no warranty is implied.

This scope of this inspection does not include a comprehensive evaluation for code compliance, governmental regulation compliance, fire safety, or hazardous materials in or around this building. It does not include an inspection of heating, cooling, plumbing and electrical systems or repair designs.

As Professional Engineers, it is our responsibility to evaluate available evidence relevant to the purpose of this inspection. We are not, however, responsible for conditions that could not be seen or were not within the scope of our service at the time of the inspection.

Terms used in this report to describe the condition of observable components and systems are listed and defined below. It should be noted that a term applied to an overall system does not preclude that a part or a section of the system or component may be in different condition:

**Average** - Component or system compares to what is typical for construction in the geographic area in which the inspection occurs. It also compares it to structures of similar age and construction type. Since construction practices vary from region to region, average is intended to be region specific.

**Excellent** - Component or system is in “as new” condition, requiring no rehabilitation, and should perform as expected.

**Good** - Component or system is sound and performing its function, although it may show signs of normal wear and tear. Some normal maintenance work may be required.

**Fair** - Component or system falls into one or more of the following categories:
1. Evidence of previous repairs not in compliance with commonly accepted standards.
2. Workmanship not in compliance with commonly accepted standards.
3. Component or system is obsolete.
4. Component or system approaching end of expected performance. Repair or replacement is required to prevent further deterioration or to prolong expected life.

Poor - Component or system has either failed, or cannot be relied upon to continue performing its original function as a result of having exceeded its expected performance, excessive deferred maintenance, or state of disrepair. Present condition could contribute or cause the deterioration of other adjoining elements or systems. Repair or replacement is required.

All ratings are determined by comparison to other structures of similar age and construction type.

DESCRIPTION
The inspection performed was of the pool deck and visible surfaces of the pool area located at the El Dorado Community Improvement Association of Santa Fe NM. The purpose of the inspection was to determine the general structural condition of these areas in order to assist in determining a course of action for repair and/or replacement.

For purposes of our report, all directions (left, right, rear, etc.) are taken from the viewpoint of an observer standing in front of the entrance to the pool area and facing it. We assume the entrance faces east.

Main pool and kiddie pool
GRADING AND DRAINAGE

Drainage and grading play an important role in keeping your structural system sound. One of the most common causes of foundation settlement is due to the accumulation of moisture near the foundation. Of particular importance is roof runoff which can concentrate a significant amount of moisture in certain areas which can lead to differential settlement.

The pool area is situated on a relatively flat lot with a slight slope downwards from east towards the west. The roof of the changing room area drains near the east side of the pool area. It is possible for moisture from the parking lot area to be diverted into the pool area. We recommend a channel drain and/or French drain be installed on the east end of the building to divert roof runoff and parking lot runoff.

Roof drainage and parking lot drainage on east side of pool area

The pool deck area shows several areas of slight ponding. Some channel drains have been added to improve drainage of the pool deck area. We recommend the drainage be improved in the area between the kiddie pool and main pool as well as on the east end of the main pool area.

Drainage on east of main pool area
Cleaning and general repair of drainage outlets should be performed periodically

STRUCTURE

Generally we find the pool deck to be in fair to good condition. There are some signs of minor heaving in some areas and deterioration of the surface. The amount of structural movement is in our opinion, slight.

The concrete surface of the pool appears to be in very good condition. We noted no little to no signs of distress on the pool surface that would indicate significant structural movement.

We noted some minor heaving in the pool deck near the east entrance. We believe this is caused by poor drainage in this area as discussed in the previous section of the report. We recommend the smaller concrete sections in this area be re-poured. This will also allow for a better inspection of the subsurface conditions as well as improvement of the drainage in this area.
evaluate the condition of the concrete. In our opinion, this additional expense and additional inspection is warranted.

Demolition of pool deck on west end allows for coring of concrete wall in pool for further evaluation.

Based on our visual inspection, there is little evidence of major structural movement of the pool deck and pool concrete structure. There is some minor heaving and movement of the pool deck which is typical. The surface of the pool deck has evidence of prior repairs. In our opinion, the pool deck should be resurfaced and have drainage issues addressed, but there is little evidence to warrant full replacement.

We recommend you have the pool systems evaluated for leaks. If necessary certain areas of the pool deck may need to be removed to access potential leaks. This will provide us with a further opportunity to evaluate subsurface conditions.

The following photos show some of the conditions we encountered with brief commentary.
Minor cracks in pool deck near kiddie pool.  Note minor cracks do not extend into pool walls

Minor cracking in pool deck near main pool area.

CONCLUSION

Generally we find the pool deck to be in fair to good condition, primarily due to drainage issues and some surface spalling. There is little to no evidence of movement of the pool concrete structure and it is in good condition. Since some material surfaces are being removed, we recommend you have the pool wall cored to further evaluate the condition of the concrete. We recommend you spend considerable effort in evaluating the pool systems for leaks and improving the drainage around the pool area.

Our report has been prepared for your benefit and in strict confidence with you as our client. No reproduction or reuse of this report for the benefit of others is permitted without expressed written consent, except as may be required by NM real estate regulation. Furthermore, except as required by real estate regulation, we will not release this report to anyone without your permission.

Sincerely,

1 Hacienda Loop, El Dorado, NM
Carlos Gallegos, M.S.

Edward Flores, Jr., P.E., Owner and Chief Engineer
STRUCTURAL INSPECTION

1 Hacienda Loop
Eldorado, NM 87108

Prepared for:

PoolPro LLC
NM

Prepared by:

Criterium Building Inspection Engineers
4801 Lang Ave NE, Suite 110
Albuquerque, NM 87109
(505) 271-1341

10/31/2018

Inspection No. 21810013c
Date of Inspection: 10/30/2018
Engineer: Carlos Gallegos
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INTRODUCTION

At your request, a structural inspection of the above property was performed on 10/30/2018. The report that follows has been prepared based on that inspection. This inspection was performed by and report written by Carlos Gallegos, Field Engineer under the direct supervision of Edward Flores, Jr. P.E. and owner.

PURPOSE AND STANDARDS

The purpose of this inspection and report is to evaluate the current condition of the structural system of these buildings and to determine what, if any, significant maintenance, repairs, and/or replacement to this system might be expected within the next few years.

This inspection report is limited to observations made from visual evidence. No destructive or invasive testing was performed. The report is not to be considered a guarantee of condition and no warranty is implied.

This scope of this inspection does not include a comprehensive evaluation for code compliance, governmental regulation compliance, fire safety, or hazardous materials in or around this building. It does not include an inspection of heating, cooling, plumbing and electrical systems or repair designs.

As Professional Engineers, it is our responsibility to evaluate available evidence relevant to the purpose of this inspection. We are not, however, responsible for conditions that could not be seen or were not within the scope of our service at the time of the inspection.

Terms used in this report to describe the condition of observable components and systems are listed and defined below. It should be noted that a term applied to an overall system does not preclude that a part or a section of the system or component may be in different condition:

- **Average** - Component or system compares to what is typical for construction in the geographic area in which the inspection occurs. It also compares it to buildings of similar age and construction type. Since construction practices vary from region to region, average is intended to be region specific.

- **Excellent** - Component or system is in “as new” condition, requiring no rehabilitation, and should perform as expected.

- **Good** - Component or system is sound and performing its function, although it may show signs of normal wear and tear. Some normal maintenance work may be required.

- **Fair** - Component or system falls into one or more of the following categories:
1. Evidence of previous repairs not in compliance with commonly accepted standards.

2. Workmanship not in compliance with commonly accepted standards.

3. Component or system is obsolete.

4. Component or system approaching end of expected performance. Repair or replacement is required to prevent further deterioration or to prolong expected life.

*Poor* - Component or system has either failed, or cannot be relied upon to continue performing its original function as a result of having exceeded its expected performance, excessive deferred maintenance, or state of disrepair. Present condition could contribute or cause the deterioration of other adjoining elements or systems. Repair or replacement is required.

*Slight Settlement* - Foundation has undergone a very minor settlement. Minor cracks in the interior finishes may be visible. No major maintenance or repairs are required.

*Moderate Settlement* - Foundation has undergone some settlement. Larger cracks in interior finishes may be visible. Doors and windows may not operate smoothly. Repairs to portions of the foundation may be necessary. Drainage and grading issues should be addressed.

*Significant Settlement* - Foundation has undergone a large amount of settlement. Very large shear cracks appear throughout home. Doors and windows bind. Typically requires underpinning of foundation and/or reconstruction of some portions of the foundation.

All ratings are determined by comparison to other buildings of similar age and construction type.

**DESCRIPTION**

Three buildings and pool sun shade structures were evaluated in this inspection. The buildings consist of a life guard house, dressing rooms with pool equipment room, and a small storage shed near the kiddie pool. The figures contain photos of the structures evaluated.
Life guard house and dressing room building

Storage shed

Pool shade structures
STRUCTURE

Life Guard House

The life guard house appears to consists of wood frame construction with some CMU walls. The ceiling is exposed wood frame construction with no finishes. The interior walls are finished with wood sheathing (T-111 or similar). The structure rests on a concrete slab on grade. In our opinion, the structure is sound and in good condition.

Life guard house interior pictures

Dressing rooms/pool equipment building.

The dressing rooms and pool equipment building appear to be built on a concrete slab on grade. The exterior and interior walls are a combination of CMU block and conventional wood framing. We believe the roof is conventionally wood framed although the framing is concealed by the drywall finishes.

We noted no significant signs of distress on the interior or exterior surfaces that would indicate significant structural problems with this building. The exterior stucco surfaces and interior drywall surfaces are in very good condition.
Interior finishes in dressing rooms and pool equipment room show little signs of structural distress

Storage Shed.

The storage shed near the kiddie pool is built directly on the existing pool concrete deck. Two of the exterior walls consist of the original CMU block fence which surrounds the pool and the remaining two walls are conventionally wood framed. The roof is conventionally wood framed.

While the structure is stable, the workmanship for the shed is below average. The roof joists are not properly supported and wood blocking can be placed directly below the joists for additional support. The doorway has no header constructed. The roof height is low and it is difficult to walk upright in the shed. Roofing nails are visible and present a safety hazard to individuals walking in the shed.

Left photo shows blocking below roof joists and right photo shows lack of door header
Circles indicate area where nails/screws protrude through roof decking

Pool shade structures

There is one large shade structure and several smaller shade structures surrounding the pool areas. They are constructed of circular steel posts and C channel type steel beams. The steel posts appear to be embedded in the concrete pool deck but we are unable to determine the depth of the concrete in these areas.

Generally the smaller shade structures and in good condition and structurally stable. The large steel structure however is in our opinion in poor structural condition. This is primarily due to the lack of adequate lateral bracing. The structure can easily be swayed side to side by hand. The easiest way of adding lateral bracing to this structure would be to add "X" Style tension braces in both directions to the structure as indicated in the following photos.
DRAINAGE AND GRADING

Drainage and grading around your building play an important role in keeping the structural system sound. One of the most common causes of foundation settlement is due to the accumulation of moisture near the foundation.

As part of our inspection, we consider roof drainage which can affect the foundation around the perimeter of your home. We also consider the lot grading and drainage which should keep water away from your home and prevent erosion.

The buildings and pool are built on a relatively flat area. The surrounding grade generally slopes downwards from the east parking lot to the west. As mentioned in our previous report regarding the pool and pool deck surfaces, we recommend you improve the drainage in grading.

In particular, the roof runoff to the east of the dressing rooms should be diverted away from the buildings.

Generally, we recommend roof run-off be diverted a minimum of 10 feet away from the foundation walls. This can be accomplished in many ways, including a combination downspouts, splash blocks, French drains, and/or gravel landscaping.
CONCLUSION

In general we find the life guard house and dressing rooms/pool equipment building to be in good structural condition. The storage shed is structurally stable. At a minimum we recommend some minor reinforcement of the roof joists and removal of exposed nails in the ceiling. The large steel shade structure should have lateral reinforcing installed. Drainage and grading around the pool area should be improved.

This report has been prepared in strict confidence with you as our client. No reproduction or re-use is permitted without express written consent. Further, we will not release this report to anyone without your permission.

Many things have been discussed in this report. However, we realize that there may still be other things of interest to you that have not been discussed. Therefore, we encourage you to call with any additional questions you may have.

Thank you for the opportunity to be of assistance to you.

Sincerely,

Carlos Gallegos, M.S.
Edward Flores, Jr., P.E., Owner and Chief Engineer
Rusty Fausnaugh
Pool Pro
P.O. Box 19426
Albuquerque, New Mexico 87119

Re: Eldorado Swimming Pool

To Whom It May Concern:

A site visit was conducted on September 25, 2018 to determine the condition of existing swimming pool equipment at the Eldorado Community Pool. The community pool consists of a large outdoor lap pool and a small wading pool. The pools each have a boiler and associated pool equipment.

A summary of the condition of major pieces of equipment is given in the table below.

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<td>Rheem</td>
<td>Restrooms</td>
<td>February 2016</td>
<td>New, good condition</td>
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A typical service life for a pool boiler without an external heat exchanger is approximately 10 years. The life of the boiler is strongly determined by pool chemistry. A local boiler supplier said he has seen boilers fail in a matter of months and has seen some last longer than 10 years. Therefore one boiler appears to have additional service life and one might be due for replacement. It is recommended that the Laars boiler be evaluated for corrosion during its next service.

The restroom water heater is new.

The pool piping and filters appear to be operating and in good condition.

In summary, the pool mechanical and plumbing systems are in generally good condition and should not need replacement in the near future. The Laars boiler is the one exception and should be evaluated during its next service.

The restrooms in the dressing rooms are not up to ADA (American Disability Act) standards. One of the toilet stalls appears to be large enough for a wheel chair but the urinal clearly does not. ADA restrooms are usually in the architectural discipline but these clearly do not meet the standard with respect to clearances, grab bars, or shower seating.
If you have any questions, please feel free to contact me.

Respectfully,

David D. Kenney, P.E.
October 29, 2018

Pool Pro, LLC
Attn: Rusty

RE: Eldorado Community Improvement Association
   1 Hacienda Loop, Santa Fe, NM 87508

Dear Rusty:

On the above referenced project, the following are the results from the ground testing on the existing swimming pool equipotential grounding completed on Friday Oct. 26, 2018. There may be other grounding issues not listed herein, but this is a good snapshot of what we were able to determine during this site visit. Robert Hurtado, the engineering supervisor, was on-site and did witness several of these readings.

Typically the ground to the pool equipment including but not limited to pumps, heaters, pool deck rebar/mesh, ladders, hand rails, ADA cup anchor, fill pipes and lights are bonded to the same common equipotential ground per NEC 680.26. During this walk through we observed multiple locations where the pool equipment was bonded properly; however, we also observed many locations that had either a poor ground or no ground. These results are as follows (photos sent via email under separate cover).

Baby pool

- Boiler - .01 ohms ( #8 bare bonded at mechanical lug at base of boiler)
- Pump- .01 oms (common point between boiler and pump)
- Fill pipe and hand rail- 99.9 ohms ( no common point between #8 from pump room to fill pipe/hand rail)

Main pool

- Booster pump- .89 ohms ( from main ground in electrical panel, No visible ground plate in pump room)
- Marathon pump in pit- .84 ohms ( The ground stubbed from the motor is not attached properly and is only resting on the #8 bare ground, no lug)
- #8 ground in pit not attached to anything- 18.9 ohms
- Main boiler- 2.43 ohms ( tested from main service ground to copper piping, no #8 bare from pump equipment)
- Hand rail at steps- 3.29 ohms
• Hand rail for ladder #1 - 1.05 ohms on one side, opposite hand rail- 99.9 ohms (no common point)
• ADA cup anchor- 70.5 ohms
• Hand rail for ladder #2- 1.06 ohms on one side, opposite hand rail- 98.1 ohms (no common point)
• Hand rail and fill pipe- 99.9 ohms (no common point)
• pool lights (could not verify due to water in the pool; however, 1 under water light is not attached properly below the water level)
• Pool deck ( could not visibly see or verify bonding)
• Appears that pool deck has wire mesh only, no rebar

Feel free to contact us with any questions, and thank you for the opportunity. Have a nice afternoon.

Respectfully submitted,

Henry Sena
Eldorado Community Pool

ELECTRICAL

The electrical distribution service is reaching the end of its life span. The electrical system was installed in the ‘70s and the age of the circuit breakers may not allow them to operate effectively in a fault or overload situation, with a constant load on a circuit breaker they can ‘weld’ in the ‘on’ position and then they will not respond to a fault condition.

The exposed electrical appurtenances in the pump room are showing signs of degradation due to the storage of pool chemicals. There is a NEC code violation on the North wall, a multi-outlet assembly is plugged into another multi-outlet assembly. There are also numerous extension cords plugged into the duplex receptacle on the North wall. This room would benefit with the installation of four quad receptacles, one installed on each wall. The light switch in this room should be an ‘occupancy sensor’ light switch.

The Restroom and showers do not have local light switching control. Current energy codes require an occupancy sensor light switch. The lights in these rooms should be, at a minimum, LED style light fixtures for energy conservation.

This is also true for the Lifeguard Office, it too requires an occupancy sensor light switch. The Lifeguard rooms also need more receptacles on the wall, the one duplex receptacle is serving numerous devices, refrigerator, laptop, clock, etc. The incandescent lamp installed in the ceiling mounted porcelain keyless should be, at a minimum, a LED style lamp for energy conservation.

The Kiddie Pool Pump Room is served by one 20-amp, 120-volt circuit, which is then distributed to the boiler fan motor, light and one duplex receptacle. The installation of this circuit is not per NEC, the light switch box is being used as a junction box, this is a code violation. This room would benefit with the installation of two quad receptacles, one on the East wall and one on the South wall. The light switch in this room should also be an occupancy sensor light switch. The incandescent lamp installed in the ceiling mounted porcelain keyless should be, at a minimum, a LED style lamp for energy conservation.

The existing 200-amp Main Circuit Breaker with associated panel is sized properly and will allow for 35-amps for additional growth, this may not be large enough depending on what is decided on the future of the pool.
This is the pump room, showing the code violation.
This is the existing 200-amp electrical panel.
This is the single phase to three phase converter for the existing three phase 7½ hp pool pump.
This is the panel schedule and load calculation for the existing 200-amp panel.
This is the Kiddie Pool Pump Equipment room, showing the code violation at the light switch, which in turn feeds the boiler fan motor and duplex receptacle.