Facilities Condition Assessment Program (FCAP)

March 27, 2014


NC STATE


APPALACHIAN
MOUNTAINEERS

IN CASE OF FIRE

EXIT BUILDING
BEFORE TWEETING
ABOUT IT


FAIL

What is FCAP?

A third party, policy-neutral, professional, technical, methodical, standardized, consistent, quality-assured review and assessment of a facility's key components and systems in order to define problems and develop cost estimates.

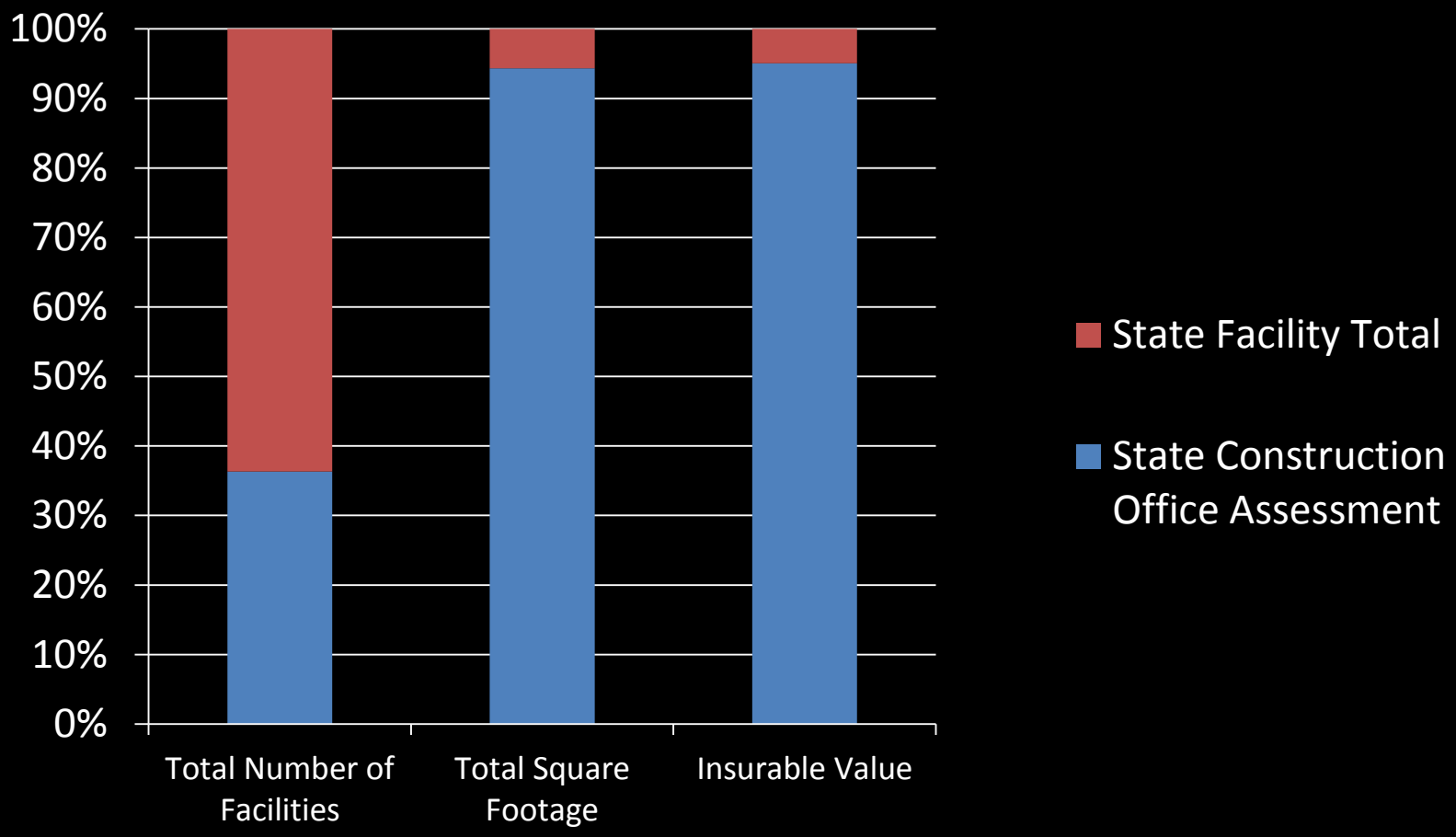
What FCAP is Not!


Horne Creek Living
Historical Farm - Barn

UNCC – Engineering Research Building (Duke Centennial Hall)


WHY FCAP?
Because not all defects are this obvious!

FCAP Assessments of State Facilities




Eastern North Carolina

DENR - Fort Fisher Aquarium – Fire sprinkler pipes in the conservatory are corroding as a result of exposure to the salt air.

DPS – New Hanover Juvenile Detention Center - Security locks need to be replaced in multiple facilities.

DCR – USS Battleship - Steel hull plating shows excessive corrosion. Battleship is now leaking around hull plating rivets and recent hull surveys indicate hull thicknesses of less than 0.1 inches.

DPS – Pitt Juvenile Detention Center - Security doors need replacing at multiple facilities.

DPS – Dobbs Youth Development Center - The storm water drainage system needs replacement.

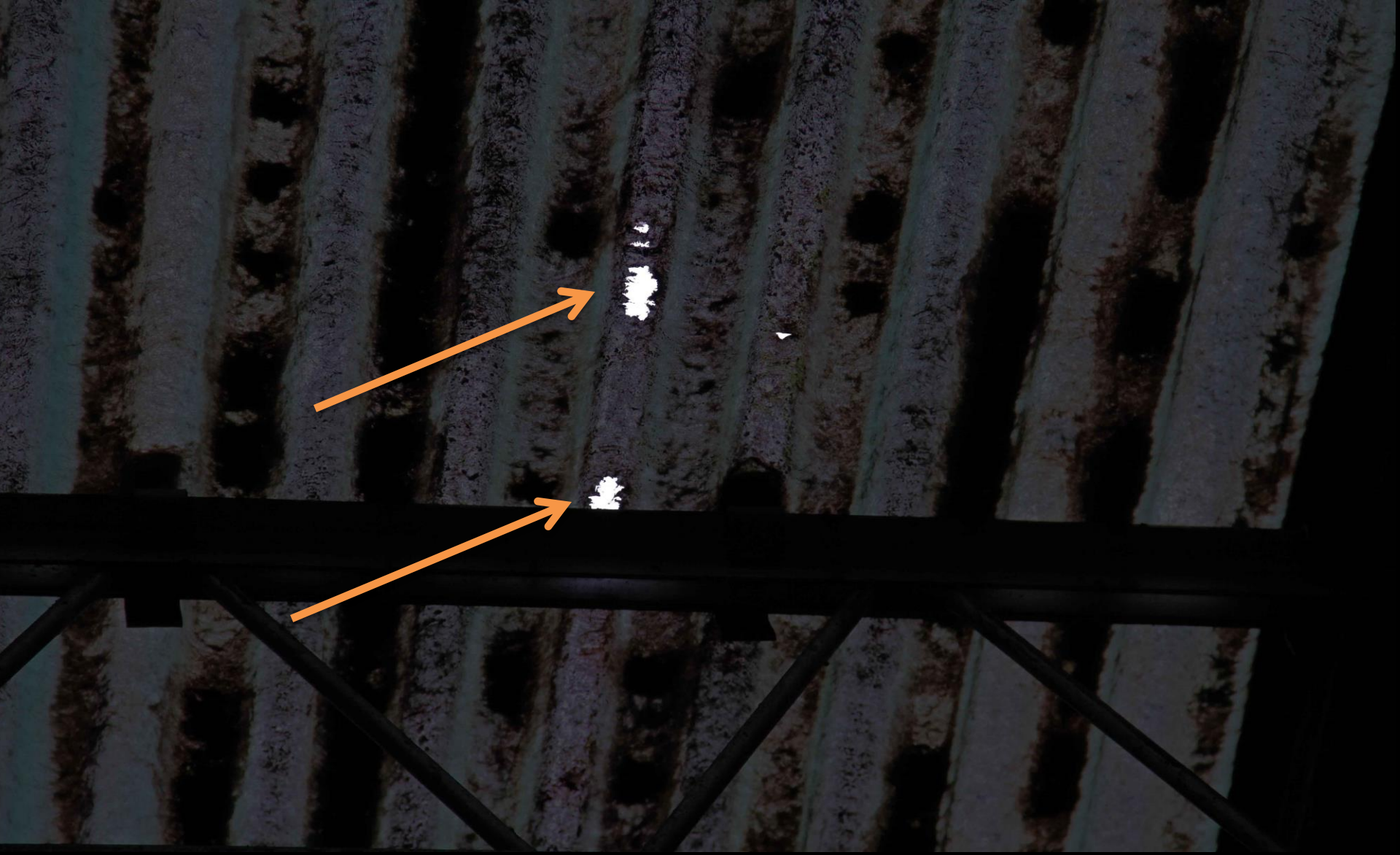
DPS – Hyde Correctional – Shower flooring needing replacement. Cracked or damaged shower flooring can cause damage to the finished spaces on the floor below (i.e. Dorms).

DPS – Hyde Correctional – Bathroom flooring worn and needs replacement.

DPS – Pitt Juvenile Justice Center Asphalt deterioration - Without repair, the freeze/thaw cycle will create further and more rapid deterioration.

DHHS – Cherry Grounds Building – Brick and mortar deterioration

DHHS – Cherry Garage – Cracked walls and foundation settling.



DHHS – Cherry Warehouse – Metal roof decking is totally rusting through. Metal is so thin, walking on it to repair causes additional penetrations.

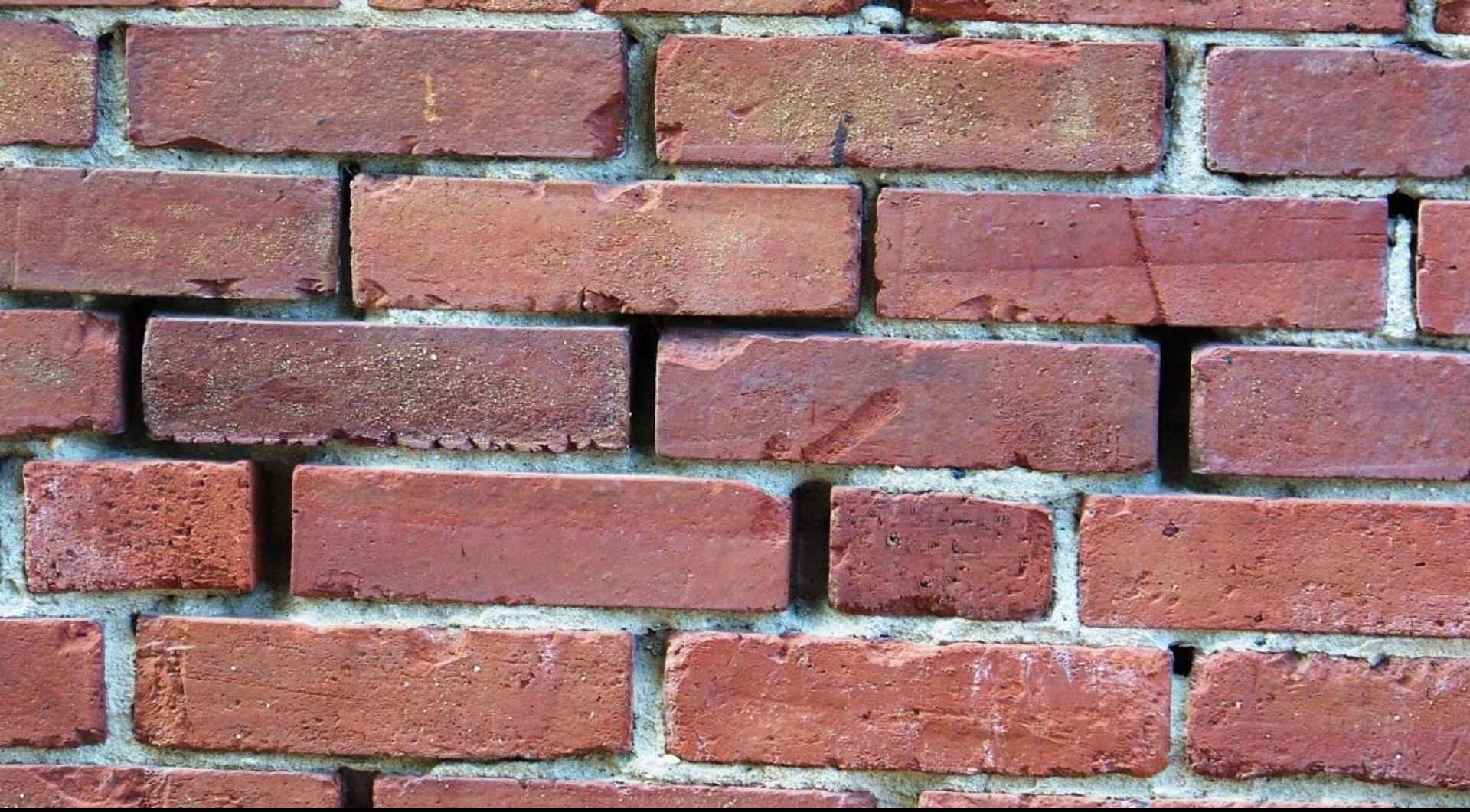
DPS – Dobbs Youth Development Center – Rusting lintels above windows causing structural problems. Typical across the state.

DHHS – Caswell Center – Gutter rusted through which causes roof water to pond against the building.

Central North Carolina

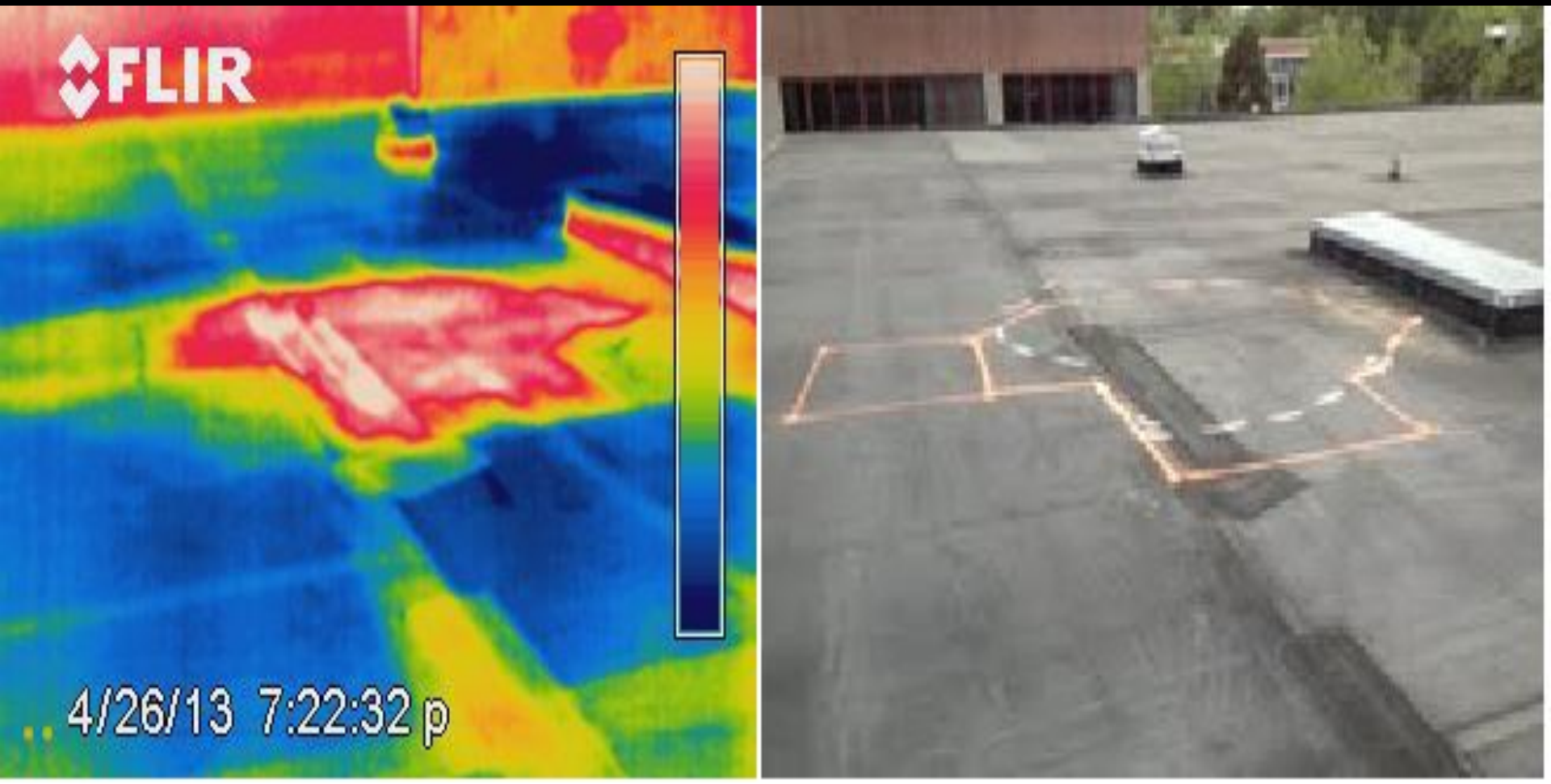
DOA – Caswell Square - Building needs to be demolished as roof is collapsing and it is a hazard.

DHHS – Dix McBryde – EPDM roofing membrane failure.



NCSU – Page Hall - Mortar loss in older masonry construction is a common route for rain water to enter a building. Moisture penetrating the building envelope will compromise structural integrity if left unchecked.

NCSU – Riddick Hall - Lateral movement of brick veneer. The weakened brick construction may cause moisture infiltration through the masonry.



NCSU – Harris Hall - Water trapped beneath the roof membrane is visible in the infrared image at left and outlined in spray paint at the right. Moisture penetrating the building envelope can reduce the efficiency of the thermal insulation, and compromise structural integrity.

DPS – C.A. Dillion School - Numerous windows need replacement through-out the campus.

DPS – NCNG – Clinton Armory – Water infiltration through windows.

DPS – NCNG – Beulaville – Water infiltration due to rotting siding and window trim.

DENR – Zoo Education Center – Roof leaks causing damage to the interior.

NCCU – Turner School of Law – Rusted stair nosing and deteriorated concrete steps. Safety hazard.

DOA – Administration – Sprayed on asbestos fireproofing releasing from structure and HVAC piping in poor condition.

DOA – Shore – Corroded piping and equipment past useful life.

DOA – Shore Bldg – Cooling tower past is useful life. Rusted and broken supports.

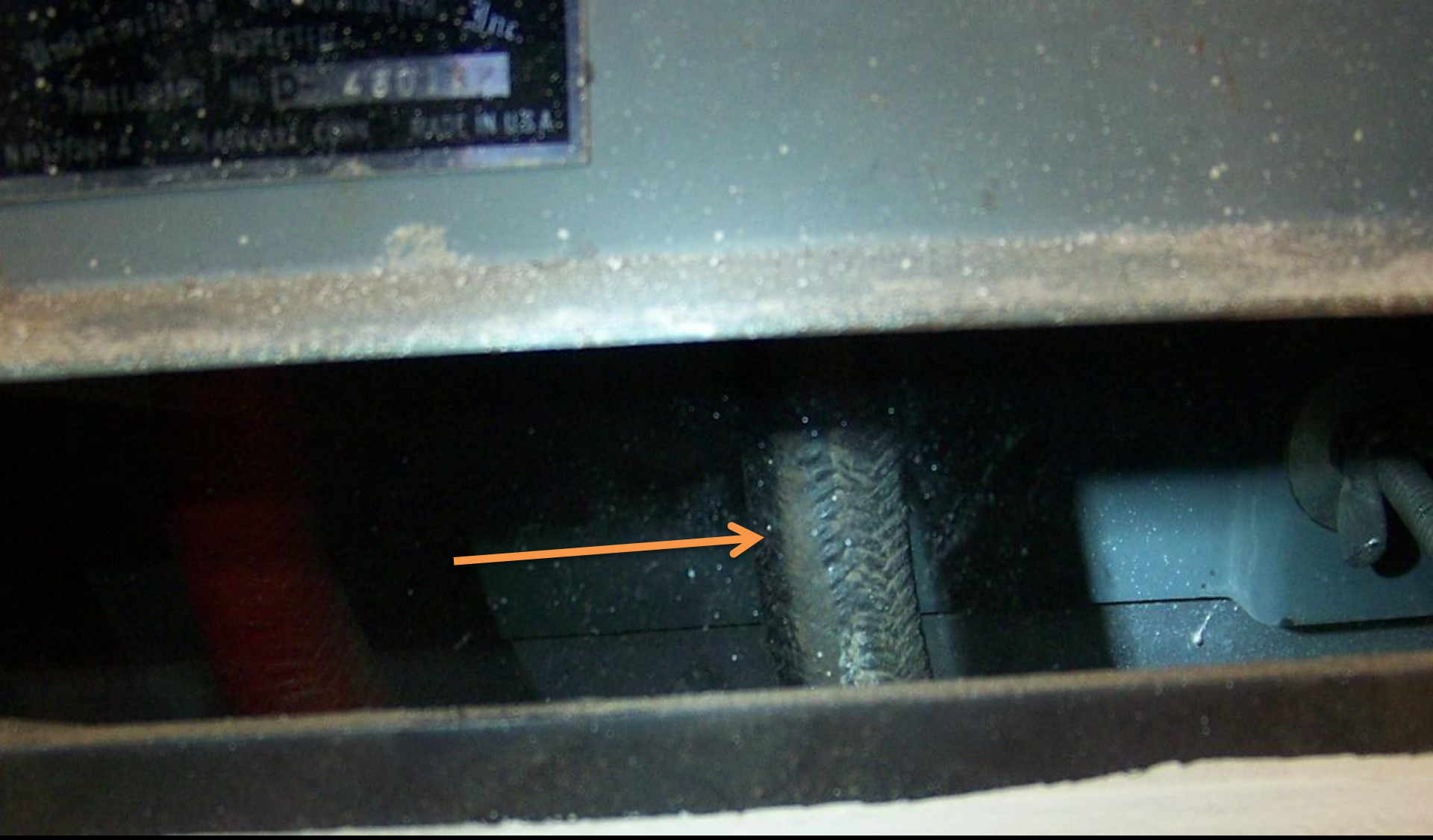
DOA – Cooper – HVAC equipment in poor condition. Installed in 1940’s.

PSU – Wellons Hall – Boiler is 50+ years old and is inefficient.

UNC-CH – Morehead Chemistry – Original ventilation system is filthy and deficient.

UNC-CH – MacNider Hall – HVAC system is deficient and poor shape.

NCSU - Condensate leak between Carmichael Complex and Talley on Cates Avenue. Steam and condensate leaks cost thousands of dollars in lost energy.



NCSU – Nelson Hall - 50+ year old Type RH wire - the rubber insulation is dry and brittle and could become a potential safety hazard.

NCSU – Carmichael Gym - Arc fault damage from failed 42 year old 1200 amp breaker – led to 2nd and 3rd degree burns to shop supervisor.

DOA – Administration – Main Control Center and Control Panel are obsolete and parts are no longer available. All controls are broken and set in manual position. Very inefficient.


Western North Carolina

DPS - Stonewall Jackson Youth Development Center - Academic, Vocational, & the Gym Buildings boilers are in need of replacement.

WCU – Steam plant equipment past useful life. Boilers are 60+ years old and can only reliably operate at 75% of rated capacity. Recent winters have pushed steam plant to its maximum output.

DPS – Avery Mitchell – Caulking failure. Common issue across the state in multiple buildings.

UNCC – Atkins - Hot water closed loop for heating showing signs of deterioration and massive scaling .

UNCC – Atkins – Hot water pumps and tank past life expectancy causing leaks and scaling .

UNCC – Barnard - EPDM/Ballast has exceeded life expectancy. Frequent and random leaks. Gravel pulled back to show deterioration.

UNCC – Burson – Old pneumatic HVAC controls. Full of oil and water (typical across the state). Temperature cannot be regulated.


DOT Shed Roof
Deterioration

DOT Facility Fused Electrical Panel

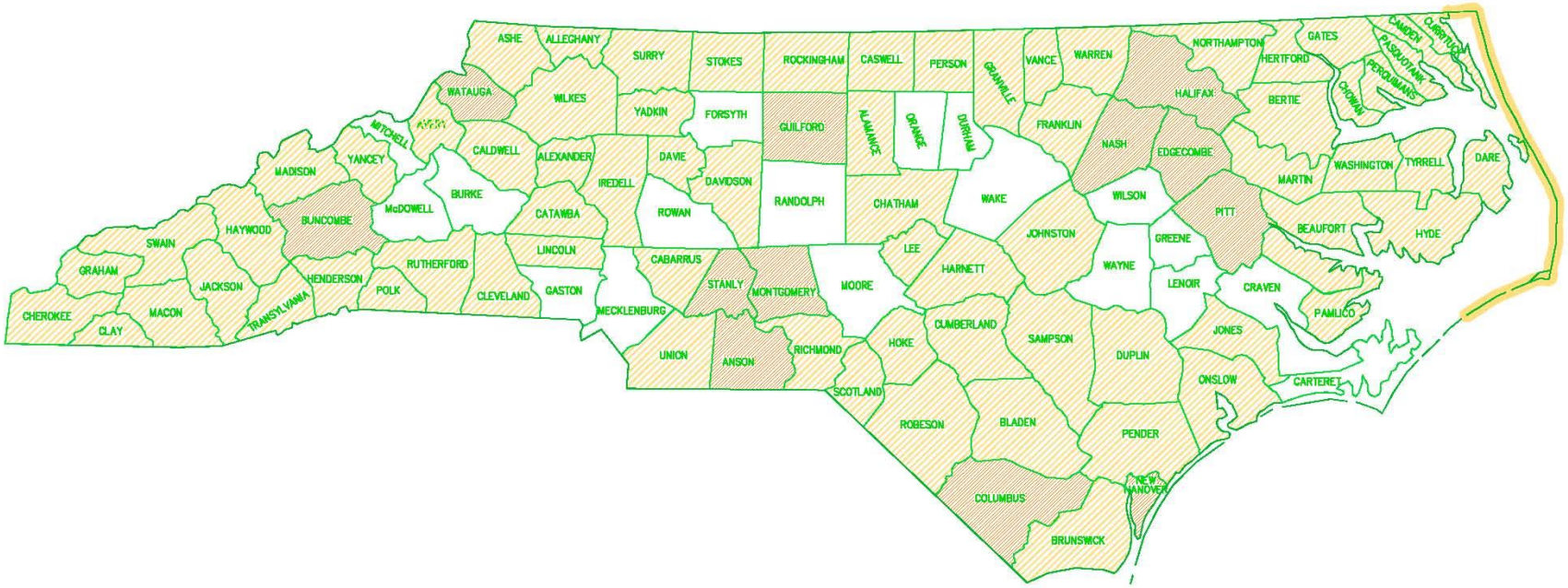
ASU – Health Services – Emergency generator out of service.

ASU – Octagon retaining wall bowing and leaning – structural stability concern.

ASU – Raley parking lot – Being unable to correct storm drainage piping causes total failure.

DHHS – Black Mtn. Neuro-Medical Treatment – Moldy ducts.


CHOICES
CONSEQUENCES



PHASE I ~24,600,000 sf.
70 Counties
1550 Buildings

PHASE II ~28,255,613 sf.
12 Counties
952 Buildings

STATE OF NORTH CAROLINA

FCAP INSPECTIONS
3/2014

Facilities Condition Assessment Program (FCAP)

March 27, 2014

SCO Conference - Facilities Condition Assessment Program (FCAP)
March 27, 2014

CLICK

As most of you know, you are sitting in Raleigh, NC on the campus of a great institution, my Alma matter, and home of the Wolfpack, a very special place to me and many who graduated from here. However, currently there is another University tucked away in another beautiful part of the State that has become very special to me. Although my heart has always belonged to NC State, presently a piece of my heart, my two oldest daughters and my money, belong to

CLICK

Appalachian State. Raleigh is a fine place to be, but it is tough to beat Spring and Fall in Boone.

NCSU and App State are just two of the great assets that our State has. Our State has numerous, wonderful assets and opportunities for its citizens and its visitors from the mountains to the coast. At the State Construction Office we are so blessed to have the awesome opportunity to affect both citizens and visitors positively through our work with each of you and the facilities we collectively improve. On behalf of the State Construction Office, we are so thankful that you have decided to join us today and for your continued support of our office. It is our pleasure to be able to serve each of you in the variety of tasks that we perform.

Our first topic of today is the Facility Condition Assessment Program or what most commonly referred to as FCAP.

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FCAP Assessments are not meant to be painful. They are meant to be helpful to the owning agencies, the Legislators and to the State Budget Office to determine the best placement of a very limited amount of funding for Repair and Renovation needs.

As many of you know, at this time the State Construction Office is actively and aggressively visiting buildings to have a complete current assessment on the majority of the State's property within a goal of 18 months. This is a daunting task, given that these assessments are being completed with no additional resources and the fact that our current standard workload is beginning to increase. We have been fortunate to relatively quickly get out and assess the properties. However, the amount of work left to be done once we return to the office to analyze, estimate and log the information into the database is very time consuming.

When we are on assessments or on inspections, we are able to see some very interesting things. It is kind of like visitors coming to your house and walking around and looking in all your closets. There is no telling what they will find there or under the bed. Fortunately, the following situations as shown in these photos were not, I repeat, not, found in any of your closets.

Signage. Proper Signage is important. As we can see from this first warning sign:

CLICK -

I have only one question: Who are we to collect the fine from, if the person does not adhere to the instructions on the sign?

CLICK

This second sign is very important. Not only should we not text and tweet while driving, we should never ever text or tweet while exiting the building during a fire. This could slow up traffic in the stairs as the people have to step on you or over you after you have fallen. You become a real hazard in an otherwise safe exit stairway.

Speaking of signage. Signage is all about communication.

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Communication is so important in all facets of the industry. Communication is important at all times in every situation. With positive communication, where you have an active listener and an active speaker, open dialogue can be established and through compromise most any conflict can be resolved.

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However, sometimes communication is not recommended. Take for instance the proximity of these buddy toilets,

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Or perhaps these urinals, signage would not be needed for communication. In fact, verbal communication should be avoided if at all possible.

Post 9/11 has seen a drastic change with regards to security. Security concerns have become a fact of life in our everyday existence. We have id badges that we wear so we can enter buildings. We have cameras positioned throughout our facilities to identify people as they enter and exit buildings. We also use cameras to deter theft of important items.

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In this facility, I am proud to report that this exit sign has not been stolen since it was installed due to the excellent placement of video surveillance equipment to deter anyone from taking it.

Of course it is important that we ensure all of our facilities are accessible. We look for these items and will comment on them during design review, inspections and during our FCAP assessments. The following situations would definitely receive comments from SCO.

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First, we must ensure that our handicap ramps lead all the way to the entrance door, and it should never stop midway of a set of steps.

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Secondly, we must always consider the needs of our vertically challenged citizens. The placement of this Automatic Teller on the plans had to be the work of a 10 foot tall architect, or the installation in the field was the work of a 10 foot tall contractor who could not read plans.

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Next we must always take into consideration the ever growing needs of the individuals who have to use the Outhouse. It is vitally important to ensure that every outhouse has satellite TV, Heat and Air Conditioning while the facility is in use.

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And last, we get to the roof. Green roofs have become very popular in recent years. However, it is very important that when installing and maintaining a green roof that you ensure that this flashing has been properly installed around your tree trunk penetration. If we do not see this flashing then we will make a comment on it.

Again, none of the proceeding installations were found in any state owned building. However, we do find many items that we make comments on.

I have mentioned several times about making comments on items that SCO assess or inspects. When does SCO make comments? Well, we make them during our contract negotiations, design reviews; construction administration, inspections and we make them on FCAP assessments. So….

CLICK – (What is FCAP) – (READ)

CLICK (READ) (Definition)

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FCAP does not include costs related to programs and/or the reconfiguration of building spaces. Also, FCAP is not a PASS/FAIL Inspection. The program provides information and analysis to Capital and Maintenance staff at institutions to make them fully aware of the current and potential problems in their facilities. Often times when you are so close to the subject matter, we can easily overlook issues that are staring us in the face. It is very good to have peer reviews to ensure that we identify as many issues as possible prior to it being catastrophic.

FCAP assists Capital and Maintenance staff regarding decisions about repairs and/or replacements, prioritizing deferred maintenance backlog & setting short & long term goals, long term planning of major building component replacements, and Capital planning of major renovations. This program has become a major force behind the State's Capital Facilities Program. We have some very qualified maintenance staff within our system who maintains our facilities with a limited amount of funding. Proper maintenance does minimize the rate of deterioration of the equipment and buildings, however, sooner or later everything wears out, and deteriorated assets must be renewed or replaced.

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The State of North Carolina has a vast variety of facilities it operates. These facilities include pole sheds, historic sites, office buildings, educational facilities, state park facilities, parking facilities, athletic facilities, dormitories, and engineering, research and lab facilities.

Comparing the current slide and this one,

CLICK

it is evident the facilities that the State owns are varied and unique. The construction of our facilities, and the building systems within those facilities, range from the very simple to the extremely complex.

Over the years, North Carolina has invested heavily in its physical facilities. Our public buildings are among the state's most valuable assets and represent significant taxpayer investments. Our buildings are durable assets constructed to last 50+ years; but they are composed of a number of components with service lives of less than 20 years.

Currently in the State's facility inventory, there are approximately 12,000 (11,931) total buildings. The smallest building, as seen here,

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is the Sentry Post at Tryon Palace at 9 sf. And our largest is GTP-6, at the Global Transpark, and is listed at 600,000 sf.

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The inventory of facilities comprises 118,145,712 total sf. The insurable value, as listed by the State Property Office, of the approximate 12,000 buildings, is $25.6 Billion Dollars ($25,650,044,743).

CLICK (WHY)

Why FCAP?

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Buildings themselves seldom fail in an obvious, catastrophic sense. The deterioration of individual components generally occurs over time and may not be readily apparent: detecting the early stages of envelope and foundation deterioration and potential issues with mechanical and electrical systems requires regular inspections by trained personnel. Once detected through regular condition assessments, relatively small problems can be repaired before they develop into much more serious problems.

The State recognized this and FCAP was developed in 1989. FCAP began with a pilot study of 100 buildings at various locations across the state. Because of the success and the valuable information that was the gathered through the pilot, the program fully began in 1990. The facility condition assessments are completed by a trained and experienced multi-disciplinary team of architects and engineers, working in close conjunction with, and receiving valuable input and assistance from the owner's facility staffs.

CLICK (GRAPH)

FCAP assesses all State-owned property of 3,000 gross square feet and larger, which constitutes a total of 4,300 (4,336) buildings out of the total 12,000 State facilities. This represents 36 % of the facilities that the State owns. However, the square footage of the buildings assessed totals approximately 111,436,870 sf which represents 94 % of the total gross square footage of all State owned facilities. In addition, the buildings

assessed have an insurable value of $24,387,572,160 which represents 95 % of the total insurable value of all State owned facilities.

CLICK (RUNNING SLIDE SHOW)

When assessing a facility the inspectors evaluate the current condition compared with the last assessment's condition. They identify any new deficiencies. The evaluation focuses on the major components of the facility such as parking lots, sidewalks and roadways; underground and overhead utilities consisting of water, sewer, steam, and electrical; the building envelope, including roof, doors, windows, waterproofing, and façade; accessibility and egress issues; and building systems such as fire sprinkler, plumbing, heating, ventilation and air conditioning, electrical including electrical switchgear, secondary distribution, fire alarm, egress lighting and emergency exit lighting. Of the deficiencies FCAP has documented approximately 58% are General Construction, 23% are Mechanical and 19% are Electrical.

The slides that you are viewing represent typical deficiencies found by our inspectors.

All facilities suffer from the effects of age, weather, and heavy use. Failure to provide adequate maintenance and repairs results in eventual deterioration and could result in loss of use of the facility. The facility condition assessment's goal is to identify potential problems prior to them becoming visible. Once the signs of deterioration become visible, the repair cost likely will be far greater than the cost of preventative maintenance. In addition, the catastrophic failure of a building system grows much more likely without routine repair and replacement.

Deficiencies occur when maintenance and repairs are not performed in a timely fashion. Uncorrected deficiencies pile up and form the backlog of deferred deficiencies. Continuing to defer needed repairs and alterations accelerates deterioration and obsolescence and results in higher eventual costs to the State.

It is generally acknowledged that a Maintenance & Repair budget should be in the range of two to four percent of the current replacement value of inventory. If adequate funding is provided, a steady state situation occurs. That is, the buildings neither decline nor improve.

From the data collected on a FCAP assessment, a facility deficiency report is developed and furnished to the owning agencies and institutions in document form, showing the basic cause; the recommended corrective action; the cost of this corrective action; and the time frame when the work needs to be completed to prevent further deterioration of the facility. In addition, immediate life safety hazards are identified and made known to the owner. Owners do a very good job of immediately addressing imminent life safety hazards that we may find during our assessment. These life safety hazards may not be building specific but more operational in nature.

The facility condition assessment not only identifies deficiencies, building code violations and life safety hazards, but it is designed to support and be used by owners to develop a full scope of work for the budgetary planning for the repair and renovation of their facilities. The assessments and reports developed by FCAP have therefore become a vital link to the agencies' and institutions' requests for repair and renovation funds.

In addition to assessing state owned property, although not required, the FCAP teams have performed assessments at the request of the community colleges on their property. We do this to assist them and to provide them with the same level of information, knowledge and technical expertise that State agencies and institutions receive in identifying deficiencies.

FCAP assessments are also performed at the request of the State Property Office on property prior to the acquisition of buildings by the State. Prior to the State Property Office bringing a property to the Council of State for consideration to add to the State's inventory via purchase or donation, we send a team out to fully assess the buildings and provide a report of our findings and estimates of repairs to bring the building into compliance with building codes and state standards.

After the Construction Conference last year, we pulled together a diversified group of owners to discuss the current needs of owners in regards to FCAP and how the FCAP program can best assist them. We established working groups to identify ways we could become more efficient and areas where our cost estimates could become even more consistent and reliable for any project across the state.

SCO took the information from both past assessments and the work groups and developed an add-on to our already existing Interscope database that could be used by our staff to categorize the data better, to upload budget estimates and pictures of the facilities, and to be able to produce the end product electronically to the owners. We have established a thorough budget estimating spreadsheet to be used unilaterally across all projects to be as consistent with our estimates as possible.

In September of 2013, the State Construction Office initiated an aggressive round of assessments of our facilities. Recognizing the need for the most current information on the state of our facilities, we have enlisted our design review and construction administration staff, in addition to their normal duties, to assist the FCAP staff with these assessments. We have completed assessments on approximately 25 million sf within 70 of the 100 counties at the beginning of 2014. We have begun our second phase of assessments, while completing the estimating and database entry from the first phase, which will encompass 12 additional counties and an additional 28 million square feet. Upon completion of phase 2, we will still have approximately 58,700,000 (58,659,365) sf and 1834 buildings to assess in the remaining 18 counties.

Prior to the beginning of this round of assessment, our records show that there was $3.9 billion dollars total in deferred maintenance and deficiencies. Someone once asked me was this number accurate. I answer that by saying that these records have been through many hands and the budget numbers have been updated many times through escalation. We do know that the differed repair and renovation needs are large. If we are off by $100 million dollars, the need is still very close to $4 billion.

The current assessment considers the past valuable data; however, I have tasked the staff with estimating every deficiency found without escalating any old estimates. Upon completion of the current assessment we will have a high degree of certainty of the total repair and renovation need.

At this time we are still analyzing the data from the first assessments. Comparatively, looking at previous and current information on 36 of the counties that we have totally assessed, 20% of those counties have their property deficiencies trending downward and 80% of those counties are trending upwards in total needs. Given this trend it should be safe to reason that once the total round of facilities have been completed the total needs in dollars will increase beyond the $3.9 billion.

The photos you have been viewing are only representative of the vast and numerous needs that the agencies and universities have in regards to their facilities. Many of these needs that at one time maybe would have been a repair or had had a 5 year planned replacement time attached to them, may still be performing their function, but more than likely at reduced efficiency and also with the possibility of imminent failure.

CLICK SOMEWHERE IN HERE

Take a roof replacement for example. We may have been out and identified a roof in need of replacement in the next 5 years. That in no way means that in the 5th year the roof will totally fail all at once. What it does mean is that if the roof is not scheduled to be replaced within the next 5 years, the likelihood that the roof will continue to degrade and leaks develop, will exponentially increase. Maintenance staff will be taken away from their normal duties to attend to water infiltration into the building. Preventative maintenance of other facilities on a campus will take a back seat to the immediate needs of the roof leaks and will in turn be detrimental to other equipment not even associated with the roof and more than likely not even in the same building. In addition, through these leaks additional damage could occur to the structure and contents of the facility. It can be easily seen that the consequences of the choice to not replace the roof are a lot greater than the roof failing.

Owners are able to take the facility condition assessments that are produced, combine them with their programmatic and space needs and incorporate them into a project budget estimate. This estimate is submitted to the Office of State Budget & Management on a priority list of what the agency considers it most critical needs.

All needs are considered within the available funds and owners are instructed on what projects have been approved.

Once owners receive the approval from the budget office, they may move forward then with the advertisement and selection of design firms for the project.

This past session the General Assembly appropriated a total of $150 million dollars for repair and renovation needs. At the first of November the State Budget Office sent out letters to State agencies informing them on which projects had been approved for funding from the $90 million that was appropriated to the agencies. The remaining $60 million of the $150 was appropriated to the universities.

Repair and renovation projects tend to be smaller projects than capital ones. Repair and Renovation projects are a very good driver of the economy. We all know that construction dollars and especially in most of our cases, vertical construction, creates jobs. These jobs are not just limited to the workers on the site. These construction dollars affect the design community, the construction workers, their families, the local grocery store, eating establishments and the local clothing store employees. In addition to keeping our buildings, parks and historic sites functioning and attractive for visitors, these Repair and Renovation dollars affect even those in the community who are not directly tied to construction. Using Associated General Contractors numbers this $150 million dollars will create or sustain at least 4500 jobs.

So where do we stand at with the present of Repair and Renovation funding.

With the $150 million there was well over 300 projects established. The majority of these projects has moved relatively quickly through the process and are in the designer selection stage, in the negotiation stage with the designer, or already have design contracts in place and designers are working on the projects. There are few projects already out for bid. In the next 3 to 4 months you will begin to see many of these projects out for bid.

The average project budget of these projects is just under $500,000. This is important to know. This puts the projects in the informal bidding limit so they are not typically advertised. It is so important for contractors who are looking to do work for the State to make yourselves known to the owners.

Every owner has an assigned Capital Projects Coordinator, a CPC. The list of CPCs for every owner is located on the State Construction's website under contacts. Don't just send an email to the CPC and say I am interested

in all your jobs you are going to bid. Take the list and go visit them. Be specific about what jobs you are interested in. Let them know what your company is capable of. Visiting the owners lets them put a face with the name and lets them understand that you are truly interested in the work and giving them a great project at the completion of construction. Start tomorrow, or even today if you recognize a CPC here, to build relationships with them. In fact, I would like for all CPCs or owners representatives to stand! These are the people you want to remember your face, positively I might add, when they are thinking of a designer or contractor who goes above and beyond the call of duty. Y'all may be seated!

I poked fun at communication when I started. But communication and relationships with owners, both public and private, will gain you more jobs than being low on bid day.

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I have quickly gone through the process from FCAP to Repair & Renovation. The FCAP program is a vital part in maintaining sound infrastructure of the State's facilities. It is a necessity to know the condition of the properties owned by the State to ensure that leaders can make sound business decisions in regards to the State's repair and renovation needs.