



# Facilities Condition Assessment Program (FCAP)

October 29, 2013



Horne Creek Living  
Historical Farm - Barn



UNCC – Engineering  
Research Building (Duke  
Centennial Hall)



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.



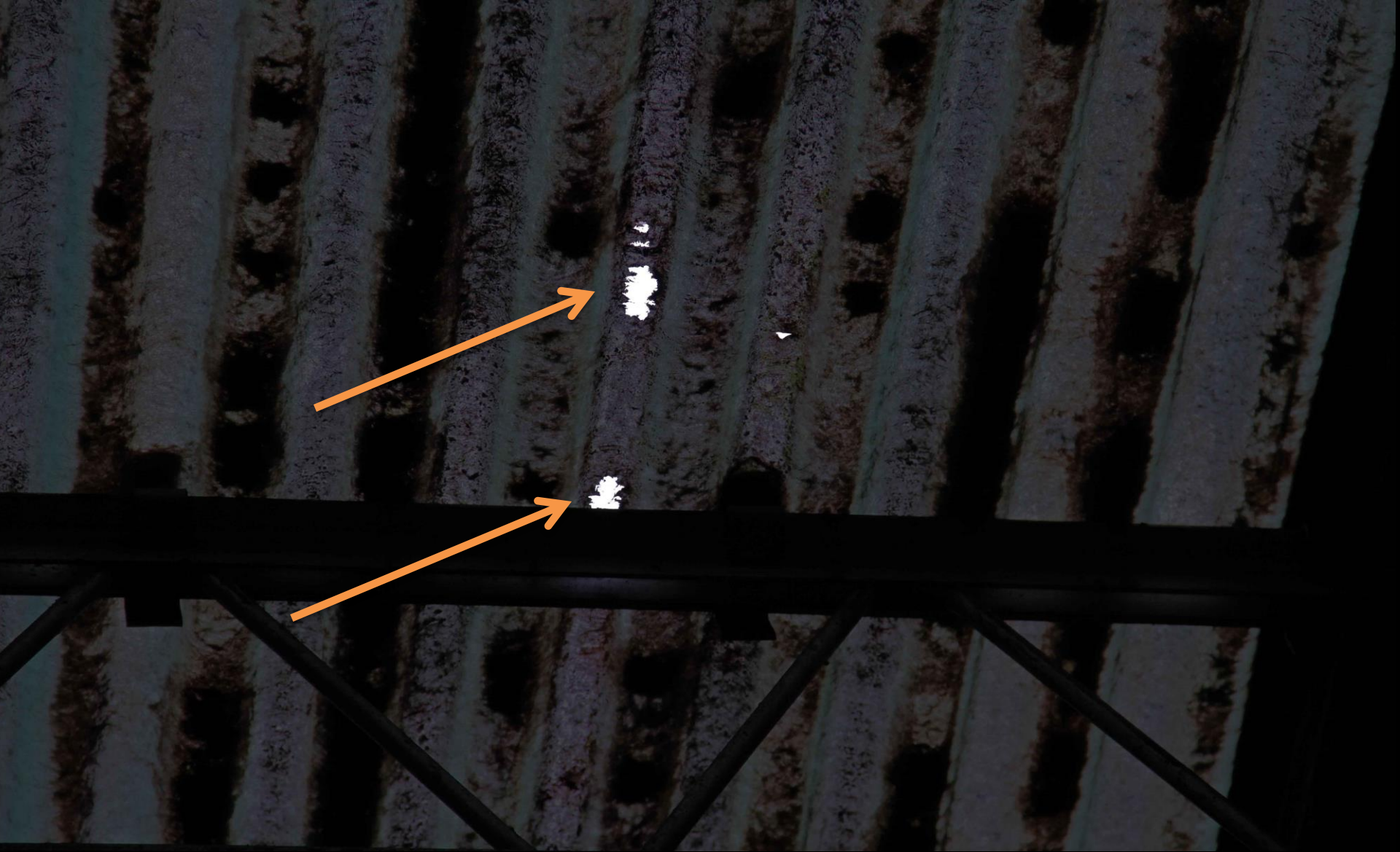
DPS – Pitt Juvenile Justice Center Asphalt deterioration - Without repair, the freeze/thaw cycle will create further and more rapid deterioration.



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.



MUSEUM OF HISTORY

April 20  
NEW WING 2012  
NORTH CAROLINA  
MUSEUM OF NATURAL SCIENCES  
Downtown Raleigh  
naturalsciencemuseum.org

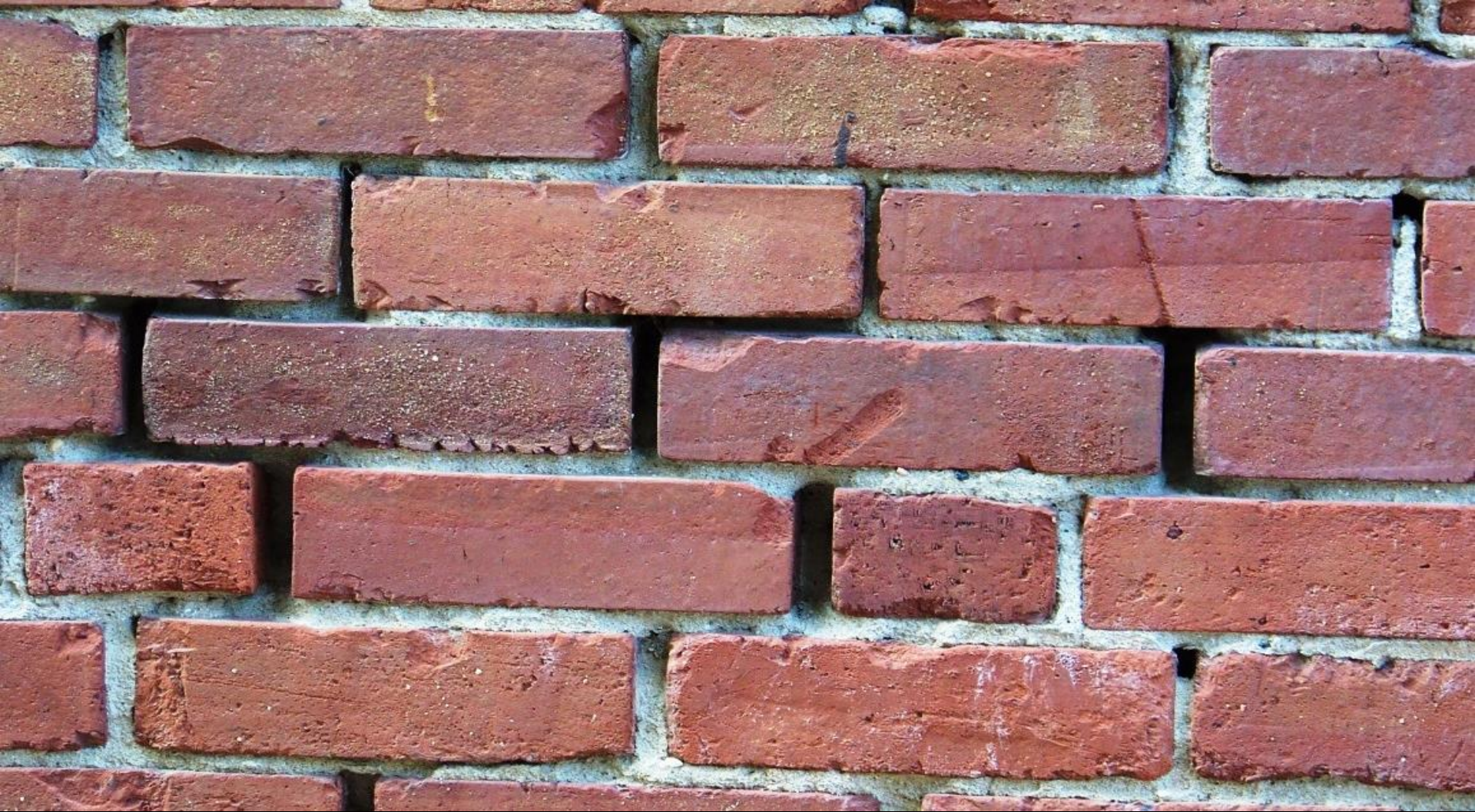
Central North Carolina



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.





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



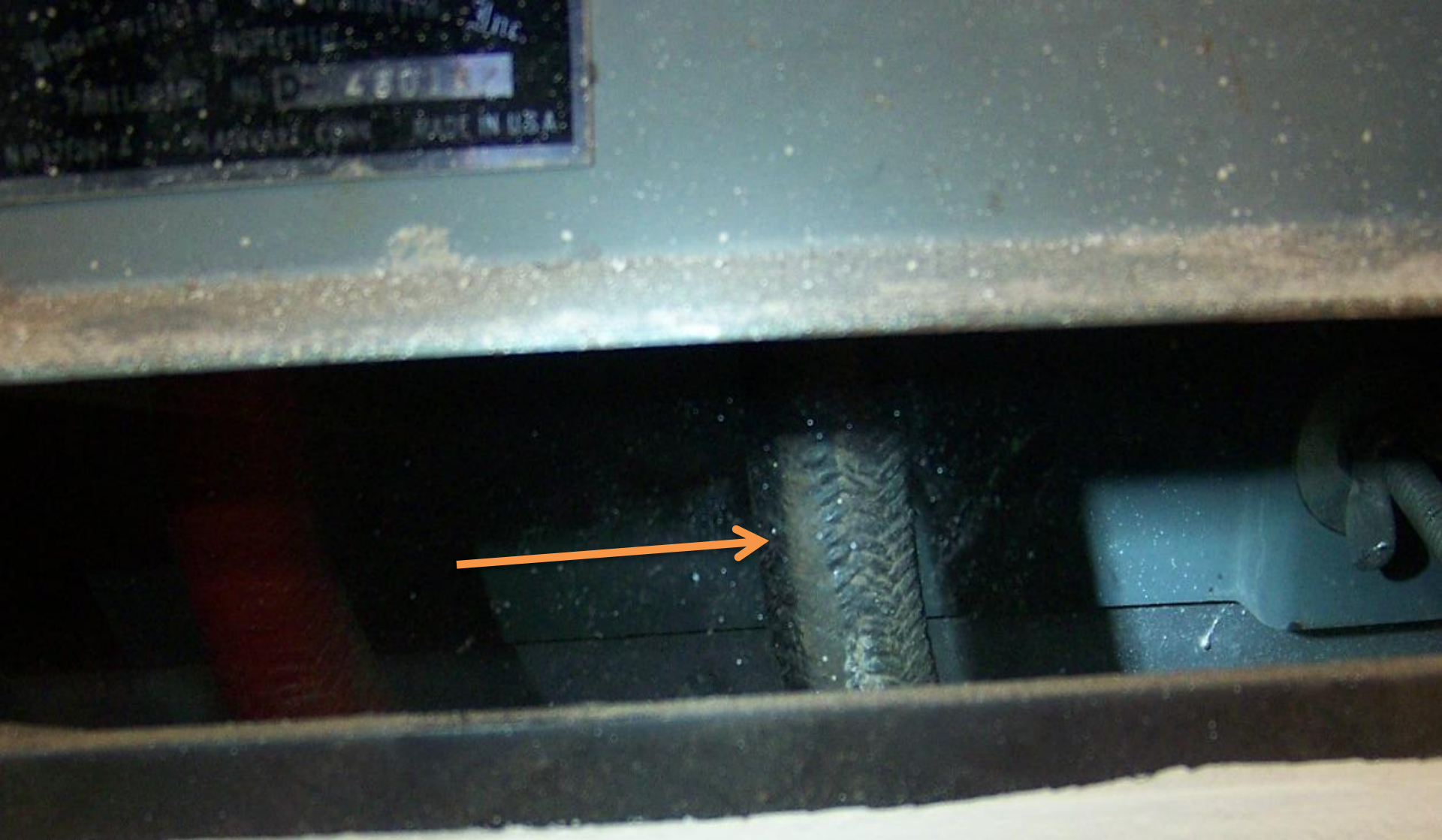
UNC-CH – Morehead Chemistry – Original ventilation system is filthy and deficient.



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 2<sup>nd</sup> and 3<sup>rd</sup> 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.

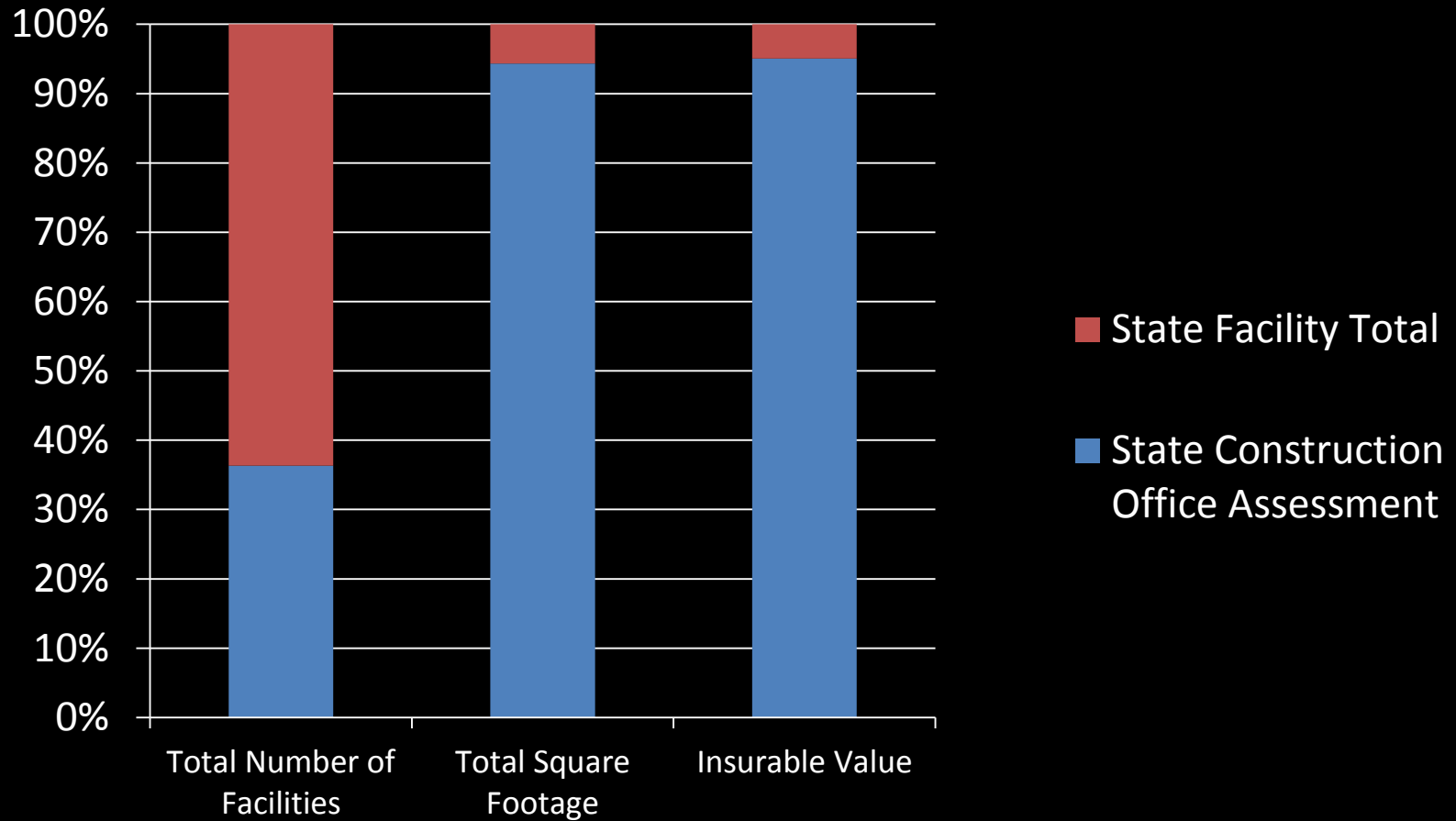


ASU – Raley parking lot – Being unable to correct storm drainage piping causes total failure.



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

# FCAP Assessments of State Facilities





# Facilities Condition Assessment Program (FCAP)

October 29, 2013

**Facilities Condition Assessment Program (FCAP)**  
**Presentation Joint Legislative Commission on Government Operations**  
**October 29, 2013**

Good morning Mr. Chairman and members of the Commission. My name is Greg Driver. I am the Director of the State Construction Office. One of the functions of the State Construction Office is to manage the State's Facilities Condition Assessment Program, commonly referred to as FCAP. The FCAP program provides a standardized, consistent, and quality-assured assessment for state owned facilities.

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 previous slide and the current, it is evident the facilities that we own are varied and unique. The construction of our facilities, and the building systems within those facilities, range from the simple to the complex. 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 is the Sentry Post at Tryon Palace at 9 sf. The largest is GTP-6, at the Global Transpark, and is listed at 600,000 sf. 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).

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 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.

FCAP is a professional, methodical review of a facility's key components and systems in order to define problems, develop cost estimates, and create plans for repairs. This program has become a major force behind the State's Capital Facilities Program.

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.

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

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.

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, to provide them with the same level of information, knowledge and expertise that State agencies and institutions receive in identifying the 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.

Recently, the State Construction Office has 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 anticipate completing assessments on approximately 25 million sf within 70 of the 100 counties by the end of 2013.

The State Construction Office is appreciative of the support offered by the General Assembly for the FCAP program. We feel 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 sound business decisions can be made.

Thank you.

References:

The Status of Deferred Maintenance at South Carolina's Public Colleges and Universities Update 2003

Budgeting for Facilities Maintenance & Repair Activities – Federal Facilities Council Standing Committee on Operations and Maintenance

Foundation for California Community Colleges - Fusion