CHAMPAIGN COUNTY BOARD
FACILITIES COMMITTEE
County of Champaign, Urbana, Illinois
Tuesday, June 2, 2015 6:30 pm

Lyle Shields Meeting Room
Brookens Administrative Center
1776 E. Washington St., Urbana

Committee Members:

Gary Maxwell - Chair	Jeff Kibler
Giraldo Rosales – Vice-Chair	James Quisenberry
Jack Anderson	Rachel Schwartz
Josh Hartke	

Facility Tour: Brookens Administrative Center – 5:15 pm – Meet in the Lyle Shields Meeting Room at 5:15 pm. Tour will start at approximately 5:20 pm.

AGENDA

Committee Meetings and County Board Meetings are broadcast on Comcast Public Access and at http://www.ustream.tv/channel/champco1776

Champaign County strives to provide an environment welcoming to all persons regardless of disabilities, race, gender, or religion. Please call 217-384-3776 to request special accommodations at least 2 business days in advance.

XI. Other Business

XII. Chair's Report

Determination by Committee whether to cancel the Tuesday, July 7, 2015 at 6:30 pm

XIII. Closed session pursuant to 5 ILCS 120/2(c)6 to discuss the setting of a price and terms for sale or lease of property owned by Champaign County.

XIV. Designation of Items to be Placed on the Consent Agenda

XV. Adjournment

Champaign County Board Facilities Committee
County of Champaign, Urbana, Illinois

MINUTES – SUBJECT TO REVIEW AND APPROVAL

DATE:	Tuesday, May 5, 2015
TIME:	6:30 p.m.
PLACE:	Lyle Shields Meeting Room Brookens Administrative Center 1776 E. Washington, Urbana, IL 61802

Prior to the Facilities Committee meeting, the committee toured the Highway building at 1605 E. Main St. in Urbana. The tour began at 5:25 p.m. and ended at 6:05 p.m. Committee members present for the tour were Gary Maxwell (chair), Giraldo Rosales, Jack Anderson, Josh Hartke and Jeff Kibler. The tour was conducted by Jeff Blue (County Engineer). Also present was Dana Brenner (Champaign County Facilities Director).

Committee Members

Present	Absent
Gary Maxwell (Chair)	
Giraldo Rosales (Vice Chair)	
Jack Anderson	
Josh Hartke	
Jeff Kibler	
	James Quisenberry
Rachel Schwartz	

County Staff: Dana Brenner (Facilities Director); Deb Busey (County Administrator); Linda Lane (Administrative Assistant)

Others Present: Pattsi Petrie (County Board Chair), John Jay, (Champaign County Board); members of the public

MINUTES

I. Call to Order

Committee Chair Maxwell called the meeting to order at 6:30 p.m.

II. Roll Call

A verbal roll call was taken and a quorum was declared present.

III. Approval of Agenda

Mr. Maxwell requested that item VII be removed from the agenda. **MOTION** by Mr. Hartke to approve the agenda as amended; seconded by Mr. Kibler. Upon vote, the **MOTION CARRIED unanimously.**

IV. Approval of Minutes- April 9, 2015

MOTION by Mr. Kibler to approve the minutes of the April 9, 2015 meeting; seconded by Mr. Hartke. Upon vote, the **MOTION CARRIED unanimously.**

V. Public Participation

Dorothy Vera-Weis spoke about the cost of moving forward with the jail project. She noted funds haven't been budgeted for this and they would need to be diverted from other intended purposes. She felt moving forward would be detrimental to receiving the MacArthur Foundation Grant. Ms. Vera-Weis hoped that if the County doesn't receive the MacArthur grant that the Board votes to continue the

momentum started by the grant application group and appropriate county money to fund the work plan submitted. She urged the committee to recommend the Board put the project on hold until the funding issues are resolved and further planning can be done.

James Kilgore spoke about the enthusiasm at last month's meeting about the need for an in-depth look at all the properties and maintenance needs. He said there seemed to be general agreement that this was long overdue. Mr. Kilgore stated it was impressive that the committee was acknowledging this issue and taking action to resolve it rather than taking the path of least resistance and putting the jail issue on the front burner. He said he hopes they continue to focus on the big picture of the facilities as a whole and place the jail within the context of that. Mr. Kilgore also said the jail issue isn't a local one, but a national one. He said there has been a bi-partisan summit on the issue of mass incarceration. He noted there is a political consensus building across the political spectrum that continuing the practice of solving the problems of crime and poverty by building jails has been a social policy disaster. He hoped the Committee and Board keep the big picture in mind even if the funding doesn't come.

VI. Communications

None

VII. Approval of Authorization for METCAD to sub-lease a portion of their space located within the Emergency Operations Center at 1905 E. Main St., Urbana, IL 61801

Removed from agenda

VIII. Decision Recommendation for Sheriff's Operation Master Plan

Mr. Maxwell noted that he sent a memo to the committee members yesterday with what he felt were their three options. He felt they needed to send the decision to the full board with a recommendation. He briefly summarized each option. **MOTION** by Mr. Kibler to send to the Full County Board without recommendation for approval; no second. **MOTION failed.**

MOTION by Mr. Rosales to send to the Finance Committee to determine if funds are available. Mr. Maxwell clarified that the motion was to send to Finance and not the Full Board. Mr. Rosales said yes if that is what Mr. Maxwell's second option was. Mr. Maxwell said his second option is to send to the Full County Board for discussion, and it would be up to the Finance Committee and the County Board to identify the funding in order to proceed. Ms. Busey clarified the second option was a recommendation to the County Board to defer any further action on this project until Finance and the County Board have identified how this project would be paid for. She said that can be interpreted as not just the $340,000 for the schematic design and planning, but to also include some form of funding for the entire project. **MOTION** by Mr. Rosales to approve item two which confers with what Ms. Busey has indicated; **seconded** by Ms. Schwartz. Mr. Maxwell clarified the motion is to move to recommend the Board vote to defer the issue of contracting for programming and schematic design of the Sheriff's Office Master Plan until the Finance Committee and the County Board have identified funding for proceeding with this project.

Mr. Anderson doesn't think they are restricted to three options. He said he thinks the role of the Facilities Committee is to identify facility needs within the County. He stated that if the committee plays that role they need to have some findings that they need to abandon the jail because of conditions and look to see if expansion is justified, then they would recommend they begin expansion of the Satellite Jail as proposed by the consultants. He said he hasn't heard a consensus to move to the Board with a recommendation to abandon the downtown jail and expand the Satellite. Mr. Anderson said he understands there is more to it, but the Facilities Committee is looking at facilities needs of the County like they plan to do with the master facilities inspection of all facilities and then send to the Finance Committee to ask if they have money and how they could proceed. He wanted to know if by throwing this into Finance Committee they are saying to Finance and the Board that they we want to move forward with this project.

Ms. Schwartz said she understands this is a facilities committee and not finance, but said don't pretend they don't know about the finances. She said they know there is no money, but even if they did have the

money for the schematics she thinks it is fiscally irresponsible to pay for them knowing there is no money to build. Ms. Schwartz didn't think it's a statement about whether they are going to proceed with the project as much as a statement about they don't have the money.

Mr. Hartke agreed with Ms. Schwartz and said they are in no position to bond out $30 million or even $15 million. He feels this should to go to Finance because they need to have a very serious discussion as an entire board about if they are going to move forward how they are going to pay for it. He said not only the bond issue will have to be before the public in a referendum but so will any sort of tax raise. Mr. Hartke said he is against that at this point in time. He felt the discussion needs to go towards the advantages and disadvantages of a tax raise.

Mr. Rosales commented that there is a quarter of a million dollar deficit this year and he can't see moving forward on the discussion of the jail until they are out of that hole. He said he can't see spending more money on this topic because they have done three studies already, but there hasn't been one discussion on how to pay for this project. He wanted to know why they would spend more time discussing an issue that is mute when there is no money.

Mr. Kibler noted that one thing missing from the motion and discussion that he was hoping they could send to the Board is the do nothing approach. He said if they plan on waiting for a response from Finance and they come back and say it will be X years before they can do this, they still have a downtown facility that needs proper attention. He said if they are going to wait then a topic that immediately needs to come to this group is to also send to Finance or come up with something in the master plan that talks about how they will fund the intermediate items they need to do to sustain the jail for when Finance can find money for this project.

Mr. Rosales pointed out a project they have on hold is a master plan for all the facilities in the County. He felt Mr. Brenner is working diligently to provide them with RFQ's and then they will decide what the most urgent things they need to do are. Mr. Rosales said if the jail is on top then they will tackle it, but that is the only plan they have been focusing on for three years. He said the courthouse has needed windows for some time and stated they have been more reactive than proactive with maintenance. He said what he would like to see done rather than talk about it like the last three years, is be able to see how they can generate more revenue and have a master plan for all buildings and then prioritize it.

Mr. Maxwell closed the discussion for committee members and asked for comments from other Board members present. There were none. Mr. Maxwell commented that what they are trying to do tonight is a matter of fairness to the consultants. He clarified that what they are proposing to do, as he understands the motion, is to send it to Full Board and let them decide what they want to do with it. He said the reason to send it to the Full Board is to let them make the decision to send it to the Finance Committee.

Mr. Hartke **MOTIONED to Amend** to send to the Finance Committee rather than the Full Board; **seconded** by Mr. Rosales. Ms. Schwartz wanted to know if they are sending it to the Finance Committee to defer the decision by the Board. She asked how the motion reads as amended. Mr. Hartke said the Facilities Committee defers this decision and it goes on the next COW agenda for Finance as an item for discussion on how to finance the project. Ms. Busey said the Finance Committee can't be prepared to respond to the recommendation at next week's COW meeting. She stated the decision is are they going to ask the Finance Committee to come up with the funding to continue with the project with the next phase of financing, or are you going to put this project on hold until the Finance Committee and Board can identify funding. Ms. Busey said that is a bigger question than looking at it as an isolated incident and felt that decision should be made by the County Board. She said the County Board needs to determine if the project should be put on hold. Mr. Hartke **withdrew his motion to amend** and said the goal is to get this into the Finance Committee. He also said that he is not willing to commit any more resources as a Facilities Committee until the rest of the Board takes some ownership on how they are going to pay for this. Mr. Maxwell asked if Mr. Rosales approved the withdrawal of the amendment. Mr. Rosales felt the discussion of detention at the Board level hasn't moved any closer for several years. He felt the ILPP report is another proposal put on the shelf. He said he is not willing to send this to the Full Board until he

finds out where the money is coming from. Discussion continued on the wording of the amended motion, the original motion, and how this issue would get to the Finance Committee. Mr. Rosales **withdrew his second of the amended motion**. Upon vote, the **Original MOTION CARRIED unanimously.** Mr. Maxwell asked that this motion not be put on the consent agenda and go to the Full County Board for discussion.

IX. Facility Requirements for ADA Compliance

Mr. Brenner stated they did a walk-through of the buildings and created the spreadsheets that are in the packet. He felt many of the items could be done in-house, reducing the costs. He indicated that some items will have some minor construction involved. Mr. Brenner said there are some items that will have to go out for RFQ but some are part of the Facilities Assessment RFQ. He explained that anything needing an architect through the RFQ process was listed at 32 months for compliance completion, and said that time starts when they have a signed agreement with the Department of Justice.

Ms. Schwartz clarified that the current RFQ is not for this but wanted to know if it addresses any of these issues. Mr. Brenner replied that it does cover some of the items and they will assist us with determining fixes and giving price estimates, and they will confirm to the DOJ that the deficiencies have been corrected. Ms. Schwartz wanted to know if they will come up with some costs and if the DOJ is first priority. Mr. Brenner answered that they are in violation and that these items have to be fixed to be in compliance. Ms. Schwartz said she assumed this wasn't going to be a small amount of money. Mr. Brenner said there is significant cost involved. He also indicated that the architect may be able to find other ways to comply to keep costs down. Ms. Busey pointed out that they have told the DOJ they are in the process of dealing with the jails through a construction project which is why the two jails have no comments on the spreadsheets. She said those buildings will have to be added if they are not within the three year time frame moving forward with that project. She commented that they expect the facility assessment to be done by the end of this year. She said that they will be working with that architect for the next three years to address everything in the settlement agreement.

Mr. Kibler asked if there is anything on the ADA list not covered at all by the RFQ. Mr. Brenner said he didn't think so but will have a better idea before the contract is signed at the end of the month about time involved to correct some of the infractions. Mr. Maxwell commented that he hopes they get and architect/engineer team because an architect only goes five feet from the building and they would need an engineer for anything beyond that such as parking lots.

X. Facilities Director's Report

A. Update on RFQ Closing May 5, 2015 at 12 noon

Mr. Brenner reported that there were eight respondents to the RFQ. He said a small committee will meet later in the month to go over the submissions and choose three, who will then have an opportunity to present and then the Board members would have an opportunity to vote. He said there would have to be an architect and engineer as part of this team because they aren't just looking at structures, but also HVAC, electrical, plumbing, and sidewalks and driveways. He felt that was all covered in the RFQ. Mr. Brenner stated that he likes the idea of having someone who is closer by, but will look and see what the others have to offer.

B. Update on the Satellite Jail Panel Investigation

Mr. Brenner confirmed that when ERA and Advanced Roofing opened the roof on the selected panels the findings were consistent with what was found on the lower sections. He said they found some surface rust and that there is over one foot of insulation. Mr. Brenner said he should have a draft of the final report next week and will share it at the next meeting. He stated that the next point is replacing the panel joints, which should be replaced every 8-10 years but have never been done since it was built. He also said he would like to look at all three panel buildings, JDC, Highway, and the Satellite Jail to evaluate their condition. He said they are in good shape but need epoxy repair work.

Mr. Brenner reported that they received a check today for just under $120,000 from DCEO for the grant they applied for and received. He said this was for project with Alpha Controls last fall and winter for the mechanical upgrade for mechanicals controls.

XI. Other Business

Mr. Hartke said that Jeff Blue mentioned on the tour that they have a large roof and a high power bill, and that solar panels would fit on the roof. Mr. Hartke said solar is plummeting in costs and rising in efficiency and said they will be at a point someday in this county when they can seriously look at installing solar on some of the buildings, especially when looking at the seven figure power bill the County pays annually.

XII. Chair's Report

A. Future Meeting – Tuesday, June 2 at 6:30 p.m.

B. Tour of the Brookens Administrative Center beginning at 5:15 pm prior to the June 2 Facilities Committee Meeting.

XIII. Designation of Items to be Placed on the Consent Agenda

Mr. Maxwell stated that there are no items to be placed on the consent agenda.

XIV. Adjournment

MOTION by Mr. Kibler to adjourn; seconded by Mr. Rosales. There being no further business, Mr. Maxwell adjourned the meeting at 7:34 p.m.

SUBLEASE AGREEMENT

This sublease is made and entered into on the date it is first fully executed by the parties hereto, by and between the City of Champaign, Illinois, a municipal corporation, hereinafter referred to as the "City", and the Metropolitan Computer-aided Dispatch Agency, and intergovernmental agency, hereinafter referred to as "METCAD," and consented to by the owner of the premises subject to the sublease, Champaign County, Illinois, hereinafter referred to as the "County".

WITNESSETH:

WHEREAS, METCAD is currently leasing from Champaign County, Illinois, hereinafter referred to as the "County", the first floor and the lower level of a building owned by the County and located at 1905 East Main Street, Urbana, Illinois, hereinafter referred to as the "METCAD Facility", for purposes of housing the operation of the METCAD 911 public safety answering service, according to the terms and conditions of a written Lease Agreement entered into by the parties on November 28, 2000, hereinafter referred to as the "Lease"; and

WHEREAS, the City is and has continuously been the "Lead Agency" for METCAD according to the terms and conditions of a succession of intergovernmental agreements by and among the member governments of METCAD, the current intergovernmental agreement having been executed by the City on June 16, 2014, during the entire term of the Lease, and the City has in that capacity administered the operation of METCAD, including the employing and supervising of all personnel assigned to METCAD and the general supervision of METCAD operations; and

WHEREAS, the City is currently maintaining a number of back-up computer servers in the lower level of the METCAD Facility, a location that provides a desirable degree of security

and protection for said servers in the event that the City's computers servers at the City Building at 102 N. Neil Street are incapacitated by a severe storm or other catastrophic event; and

WHEREAS, the City and METCAD desire to enter into this Sublease Agreement, hereinafter referred to as the "Sublease", with the consent of the County, for the purpose of memorializing the respective party's rights and responsibilities with regards to said use of the METCAD Facility, including identifying a reasonable amount of consideration to be paid by the City to METCAD for the use of said space.

NOW THEREFORE, in consideration of the mutual benefits accruing to the parties hereto, the City and METCAD hereby agree as follows:

Section 1. Recitals The recitals set forth above are hereby incorporated by reference herein.

Section 2. Premises subject to the sublease. The portion of the METCAD Facility that is the subject of this Sublease, hereinafter referred to as the "sublet premises", is an portion of a room located in the lower level of said facility, which room is depicted in Exhibit "A" attached hereto and incorporated by reference herein, having an area of approximately forty (40) square feet, where the City is currently storing one computer server and other computer back-up equipment.

Section 3. Use of the sublet premises. The City shall use the sublet premises for the purpose of storing, operating and maintaining one computer server and other computer back-up equipment to function as an emergency back-up for computer servers operated and maintained by the City at the City Building at 102 N. Neil Street. Employees of the City shall have access to all common areas in the METCAD Faclities as necessary to access the sublet premises for operating, maintaining and repairing the computer servers, and shall have access to restroom

facilities in said Facility when present at that facility for purposes of operating, maintaining and repairing said computer servers.

Section 4. Term of Sublease. The term of this Sublease shall commence on the date it is first fully executed by the parties hereto, and shall end at midnight on June 23, 2022, seven days prior to the termination date for METCAD's lease of the METCAD Facility with the County, unless otherwise terminated at an earlier date as provided herein.

Section 5. Rent for the sublet premises. The City agrees to pay METCAD for the sublet premises at a rate of $5.00 per square foot, the annual sum of two hundred dollars and 00/100 cents ($200.00)**,** which sum shall be paid by the City upon execution of this Sublease, and on or before each anniversary date of this Sublease, for the term of the Sublease.

Section 6. Utilities for the sublet premises. METCAD shall be responsible at METCAD's sole expense for providing the utilities necessary to maintain the functionality of the sublet premises, including heat, airconditioning and electricity necessary to operate the City's computer servers.

Section 7. Condition of Premises . CITY has inspected the sublet premises just prior to executing this Sublease, and accepts said premises in their "As Is" condition.

Section 8. Janitorial Services. Janitorial services will be made available by METCAD as necessary to maintain the sublet premises, at no charge to the City

Section 9. Maintenance and Repairs.

(a) Maintenance. During the term of this sublease, METCAD shall be responsible for the maintenance of the sublet premises.

(b) Repairs. METCAD shall be responsible for all repairs to the heating, sewer, plumbing, mechanical, electrical, and air conditioning systems serving the leased premises. METCAD

shall not be responsible for any repair to the City's computer servers maintained in the sublet premises.

Section 10. Surrender Upon Expiration. Upon the expiration of the term of this sublease, or upon the date of termination by other means authorized herein, the City shall surrender the sublet premises to METCAD immediately without further notice or legal process in good condition and repair, ordinary wear and tear excepted and remove all City personal property from the Premises.

Section 11. Insurance. The parties recognize that the City, in its capacity as the Lead Agency of METCAD, currently maintains and administers, for the benefit of all intergovernmental METCAD members, insurance regarding METCAD operations and the METCAD Facility. All insurance policies pertaining to operations of METCAD at the METCAD Facility shall continue to be maintained by the City in its capacity as Lead Agency acting on behalf of all METCAD members. The City shall continue to maintain insurance coverages, including but not limited to Worker's Compensation, General Liability and Property Insurance related to the operations conducted by METCAD personnel, personal property maintained by METCAD, and the computer servers maintained in the sublet premises by the City.

Section 12. Default.

(a) Each of the parties to this Sublease, on default by the other party with respect to any of the provisions of this Sublease, shall provide the defaulting party with written notice identifying the nature of the default. Upon receipt of said written notice of default, the defaulting party shall have thirty days to correct the condition or, if the condition cannot be reasonably corrected in thirty days, shall diligently pursue actions necessary to correct the condition. If the

condition is not corrected by the defaulting party within thirty days, or the defaulting party ceases to exercise due diligence to correct any condition that cannot be reasonably corrected within said thirty-day period, the non-defaulting pary may elect to declare a forfeiture and terminate the Sublease by ten (10) days' written notice to the defaulting party, or may elect to enforce the terms and conditions of the lease by any other method available under the law.

Section 13. Termination.

(a) Destruction of Building. In the event that the Sublet premises are rendered unusable for the City's purposes by fire, explosion or other casualty or reason, natural or otherwise, the City or METCAD shall each have the option to terminate this Sublease with thirty days prior written notice to the other party.

(b) METCAD's need to use Sublet Premises for METCAD purposes. The parties recognize that METCAD may need the sublet premises for METCAD purposes before the end of the term of this Sublease. In addition to its rights upon default by the City, METCAD may terminate this Sublease with 6 months prior written notice to the City in order to allow the City a reasonable amount of time to find a new location for the computer servers occupying the sublet premises.

(c) City no longer needs Sublet premises for servers. The parties recognize that the City may not need the Sublet premises for storing its back-up computer servers on a date prior to the end of the term of this Sublease. In addition to its rights upon default by METCAD, the City may terminate this sublease with ninety days prior written notice to METCAD.

(d) Abatement of rent. In the event of termination by either party pursuant to the terms of this section, the parties shall make an adjustment to the annual rent for the year-long

period encompassing the date of termination in proportion to the reduction in the duration of City's occupancy of the Sublet premises for that year-long period of time.

Section 14. Indemnification. To the fullest extent permitted by law, each of the parties hereto shall at its sole expense and with counsel reasonably acceptable to the other party, indemnify, hold harmless and defend the other party from and against all claims for damage to property or injury to persons, including death, to the extent proximately caused by the act or omission of the indemnifying party and arising out of or relating directly or indirectly to this Sublease.

Section 15. Notices. Any and all notices, demands or communications required to be given hereunder shall be in writing and sent by certified mail, return receipt requested:

a. To METCAD as follows: Director, METCAD, 1905 East Main Street, Urbana, IL 61802, or at such other place as METCAD may designate hereafter in writing. To the City as follows:

b. To the City as follows: City Manager, 102 N. Neil Street, Champaign, IL. 61820.

IN WITNESS WHEREOF, the parties hereto, pursuant to authority given by their respective governing bodies, have caused these presents to be executed by their duly authorized officers, duly attested, on the dates set forth below.

CITY OF CHAMPAIGN, ILLINOIS

By:_____ Date of City Manager Signature:_____
City Manager

ATTEST:_____
City Clerk

Approved as to form:_____
Assistant City Attorney

METCAD

By:_____ Date of METCAD Director's Signature:_____
METCAD Director

ATTEST:_____

CHAMPAIGN COUNTY, ILLINOIS

By:_____ Date of County Administrator's Signature:_____
County Administrator

ATTEST:_____

Approved as to form:_____
Assistant State's Attorney

May 2015

Concrete Wall Panel Cracking Investigation
Champaign County Satellite Jail

John Frauenhoffer, PE, SE

Purpose

The Champaign County Facilities Director identified a suspicious cracking pattern in the precast prestressed concrete wall panels and observed that the vertical wall panel joint sealants had failed. Some joints are badly cracked, and some joints are fully deteriorated. The question of whether or not the panels could be repaired or whether a time dependant structural deterioration was sacrificing the structural integrity required answers. A Licensed Structural Engineer has previously suggested that prestressing strand corrosion may be occurring. Strand corrosion is serious since it is difficult to arrest and since prestressing strands corrode at an accelerated rate relative to normal strength carbon steel.

This investigation was developed to determine the cause of the cracking. Three potential cracking theories were tested:

1. Prestressing Strand Corrosion
2. Welded Steel Wall Panel Base Connection Corrosion
3. Wind driven rain intrusion resulting in winter ice expansion

Drawings

The Architect's drawings depict a wall panel to foundation connection detail labeled Section 2 on Sheet S0401, included in Attachment A. A steel plate was shown to be embedded in a grout pocket at the bottom of the panel, connecting to an embedded plate in the cast-in-place concrete footing. After the connection was completed, the embedded plates were to be encased in grout. The alkalinity of the grout would react with the steel creating a passivation layer, protecting the below grade connection from corrosion.

The precaster's shop drawings show a connection substitution. The precaster proposed to embed a steel plate on the bottom inside face of the wall panel. A companion embedded steel plate was to be cast into the footing, located inside of the wall panel. A steel angle was then intended to be field welded to the two plates, completing the connection. The connection was then backfilled without being encased in concrete leaving the connection potentially subject to corrosion during high groundwater and/or high subgrade moisture conditions.

Observations

Photograph #1: East Wall at Exterior Jail Exercise Yard
Horizontal Cracking near Top of Wall Panel
Vertical Cracking near Bottom of Wall Panel
Free Lime is leaching out of the cracks, evidenced by the white stains draining from the cracks.

Most of the wall panel cracking can be defined in two categories:

1. Vertical Cracking: Typically one or two cracks appear to propagate from the bottom of the panel, disappearing below the ground line. To a much lesser degree at the corners, vertical cracking can be seen at panel edges.

2. Horizontal Cracking: Typically the cracks occur near the top or the bottom of the wall panels and can meander across the wall panel joints. Some vertical cracks intersect horizontal cracks.

Photograph #2: Close-up of Photograph #1 near Top of Wall Panel

Photograph #3: Close-up of Photograph #1 near Bottom of Wall Panel

Photograph #4: Close-up of Photograph #1 showing Vertical Cracking The Wall Panel was cored at the Base Connection, and the Prestressing Strands were exposed. The Base Connection was buried in moist sand and exhibited surface rust. One strand exhibited surface rust. The other three strands were in good condition.

The exterior wall panels are composed of a six inch thick interior concrete layer and a three inch thick exterior concrete layer separated by a two inch thick foam insulation board. The interior and exterior concrete layers have vertical prestressing strands and a rectangular pattern welded wire fabric. The two layers of concrete are mechanically tied together with steel wire ties. The insulation layer stops short of the bottom and top of the wall panels by approximately seven inches, however the insulation layer does extend for the full width of the wall panels.

At three locations, ground at the base of the wall panels was excavated by the County Highway Department. Two excavations were located on the south wall near the southeast corner of the Jail, and one excavation was located on the east wall at the Exercise Yard as shown in Photograph #4. The locations are depicted on Attachment A.

At each location, the following removals revealed the internal construction:

1. A twelve inch diameter concrete core was centered on the interior wall panel to footing connection. The coring allowed for inspection of the buried embedded steel plate that affixes the bottom of the wall panels to the footing.

2. Each of the four prestressing strands in the exterior concrete layer was exposed by chipping the concrete with pneumatic drills and hammers.

At the east wall location:

Photograph #5: The Wall Panel Base connection exhibited surface corrosion. The steel connection is buried in sand below the floor slab. The sand was moist. The adjacent prestressing strand was corrosion free. The wall panel cracking does not extend to the bottom.

Photograph #6: The strand on the left side of the panel was corrosion free.

Photograph #7: The right-center strand exhibited surface corrosion.

Photograph #8: The strand on the right side of the panel was corrosion free.

Photograph #9: South Wall Location at a Jail Cell

Photograph #10: The Wall Panel Base connection exhibited surface corrosion on the buried face. The steel connection is buried in moist sand below the floor.

Photograph #11: The strand on the left side of the panel was corrosion free.[20]

Photograph #12: The left-center prestressing strand was corrosion free.

Photograph #13: The right-center prestressing strand was corrosion free.

Photograph #14: The strand on the right side of the panel was corrosion free.

Photograph #15: Southeast Corner Location

Photograph #16: The Wall Panel Base connection exhibited surface corrosion on the buried face. The steel connection is buried in moist sand below the floor.

Photograph #17: The strand on the left side of the panel was corrosion free. The L-shaped tie wire is the mechanical connection between concrete layers.

Photograph #18: The left-center prestressing strand was corrosion free.

Many of the vertical cracks dissipated below the ground surface. The crack at the right-center prestressing strand propagated downward to approximately the level of the bottom of the insulation layer and then propagated horizontally. There was a bulging of the exterior concrete layer where the vertical crack and the horizontal crack teed together. **This cracking pattern is congruent with a bursting force centered within the wall panel thickness.**

Photograph #19 shows this right-center prestressing strand location. The vertical prestressing strand exhibited surface corrosion. Near the top of the opening is a horizontal welded wire fabric wire that is corrosion free. The vertical crack in the panel propagates from the top of the opening, and the horizontal crack propagates from the sides of the opening.

At this location, pressurized air is blowing out from inside the jail through the left vertical wall panel joint. This wall panel joint sealant has failed.

Photograph #19: The right-center strand exhibited surface corrosion.

Photograph #20: The strand on the right side of the panel was corrosion free.

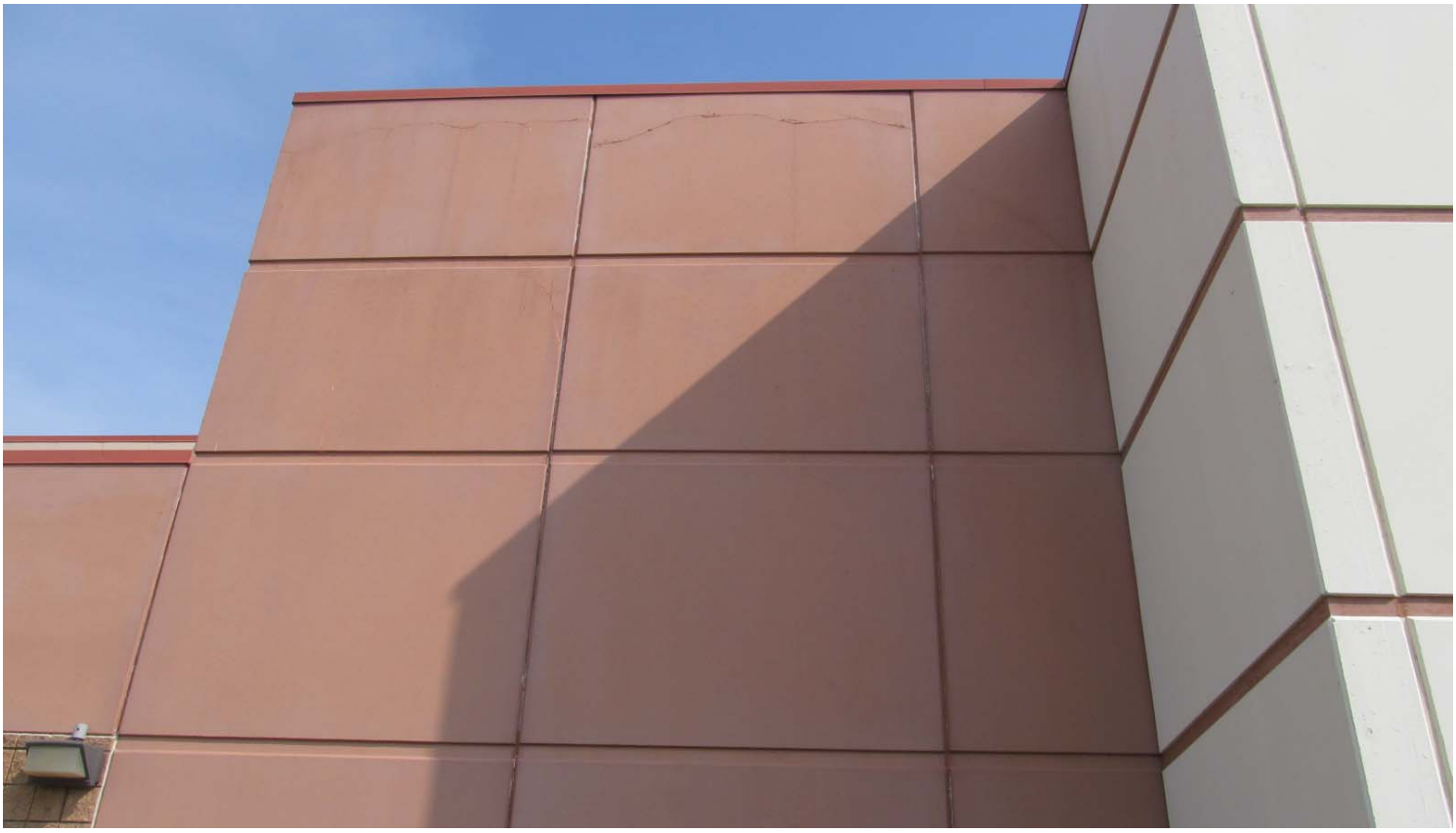
Cracking Patterns

The cracking patterns in the wall panels can generally be defined as:

1. Vertical cracks propagating upward from the bottom of the insulation layer.
2. Vertical cracks in the sides of wall panels at corners.
3. Meandering diagonal cracks, some of which propagate from the top of vertical cracks.
4. Meandering horizontal cracks near the top of the wall panels.
5. Meandering horizontal cracks just above the ground line.

The cream colored panels generally exhibit the first three cracking types. The brown colored panels exhibit all cracking types. Photograph #21 was taken on April 8 after a rain storm the night before. After the morning sun dried the exterior face, wind driven rain then weeped from the cracks.

Photograph #21: East Wall Cracking Pattern



Photograph #22: Cracking at the top of a South Wall Panel

Photograph #23: Cracking at the ground line of a West Wall Panel

Photograph #24: East Exercise Yard Wall Cracking

Photograph #25: Interior Wall Panel Joint Sealant

Photograph #26: East Wall Panel Edge The insulation was cut or held back from the Wall Panel Edge. The mortar over the insulation is cracked.

Three roof cuts exposed the precast prestressed concrete roof plank connections to the precast prestressed concrete wall panels and the roof membrane termination. The roof was opened on the east wall near the southeast corner, on the south panel adjacent to the re-entrant corner at the southeast corner of the building, and on the south panel on the opposite re-entrant corner at the southwest corner of the cell block. The locations are depicted on Attachment A.

Photograph #27: East Wall Roof Cut

The roof is ballasted with rock. Ballasted roofs are not adhered to the roof planks or the metal roof deck, and the weight of the rock prevents the roof membrane from wind damage. The roof cuts revealed the following:

1. The roof plank to wall panel connections exhibited surface rust, likely caused by wind-driven rain intrusion through the roof cap. **Some of the roof plank to wall panel connections were missing.** Attachment A includes the connection detail.

3. As shown in Photograph #24, the roof membrane was carried up the back of the wall panel and was fastened to the wood blocking below the red metal cap. The metal cap vertical lap down over the top of the wall panel varies from ½ inch to 1 ¾ inches, insufficient to protect the roof membrane termination from wind driven rain.

Photograph #28: Rust on roof plank / wall panel connection, East Wall

Photograph #29: Rust on roof plank / wall panel connection, SW Corner

Photograph #30: Roof cut at Southwest Corner of the Cell Block
There were no connection plates in the roof plank. Wall panel connection plates are visible, and the connections were not completed.

Photograph #31: Re-entrant Southwest Corner of the Cell Block
At the top of the photograph is the open roof cap that will allow wind driven rain to penetrate underneath the cap and underneath the roof membrane. The wall panel joint has fully deteriorated.

Analysis

Prestressing Strand Corrosion: Of the twelve prestressing strands that were inspected, two exhibited surface corrosion. **Hence, the cracking of the panels is not caused by strand corrosion.** Further if strand corrosion were the cause, corrosion product would likely be penetrating along the cracks and staining the face of the wall panels.

Welded Steel Connection Corrosion: The wall panel base welded steel connection exhibited only surface corrosion and is not the cause of the wall panel cracking. The connection is buried in sand that was found moist. Depending upon the time of the year and the precipitation amounts, this sand could be found wet, moist, or dry. **As long as there is moisture and oxygen present, the base connection can be expected to continue to corrode.**

Wind Driven Rain Intrusion resulting in Winter Ice Expansion: The deteriorated wall panel joints allow wind driven rain to penetrate the walls. The insulation layer extends to the joints. Moisture can penetrate between the insulation and the concrete. As shown in Photographs #1, #2, #3, and #4, there is evidence of water draining from the cracks carrying the free lime in the concrete to the surface, causing the white staining. Moisture between the exterior concrete layer and the insulation would then drain downward, either exiting at a crack or collecting at or near the bottom of the panel. **During winter freeze-thaw cycles when wind driven rain occurred on a 40 degree Fahrenheit day, it would then freeze during the corresponding 20 degree F night causing cracking.**

Opinions

In my professional opinion, the Satellite Jail has suffered from damage related to wind driven rain intrusion. My opinion is based upon the following:

1. The wall panel vertical joints have not been maintained, and some of the joints are fully deteriorated. At one location at the southeast corner, air can be felt discharging out of the building. Deteriorated panel joints allow wind driven rain to penetrate the sides of the panels and between the insulation and the concrete where the insulation layer is exposed. Water then either becomes trapped between the insulation and the concrete, drains downward, or drains out of a crack.

2. Wind driven rain can penetrate the wall panels through the panel joints or through cracks. During the winter, accumulated moisture in the wall panels during a forty degree Fahrenheit day will freeze during a twenty degree Fahrenheit night. Freezing water expands in volume, compressing the insulation layer and cracking the concrete. If the freeze-thaw cycle continues, one rain event could trigger multiple damage cycles as the water migrates downward during the liquid phase.

3. Cracking will propagate at prestressing strand locations because of the stress concentrations in the concrete caused by prestressing bond. This cracking left in disrepair will lead to prestressing strand corrosion, which progresses at a faster rate than normal carbon steel corrosion.

4. The darker panels have more damage than the lighter panels, likely because the darker panels absorb more solar heat, aggravating the frequency of freeze-thaw cycles.

5. The insulation layer terminates within one foot of the top and bottom of the wall panels. In Photo #15, the vertical crack at the second excavation from the right propagated horizontally in both directions at the level of insulation termination, signally water collection and freezing at that level.

Critical Rehabilitation Components

The following building components are critical for extending the lifecycle of the building:

1. Wall panel prestressing strands: Should the prestressing strands corrode, the wall panels will lose structural capacity. Cracks and joints must be sealed in order to protect the strands.

2. Wall panel connections: The structural stability of load bearing precast prestressed concrete wall panels is dependent upon the connections to the foundation, to the roof planks, to the floor planks, and between the panels. Omitted connections must be completed, and corroding connections must be replaced.

Recommendations

I recommend that following Scope of Work to extend the wall panels' lifecycle. Wall panel lifecycle can be expected to extend to the useful life of the facility if the recommendations are implemented.

Priority One: Repair and Seal the Wall Panels above Grade.

1A. Repair and Seal Cracks: Where feasible, inject the wall panel cracks with epoxy. Where infeasible, rout the cracks and seal. This is important to reduce wind driven rain intrusion and **critical to preserving the prestressing strands**.

1B. Replace the Vertical Panel Joints: For all precast concrete wall panel buildings, wall panel joint repair and/or replacement is required maintenance. This recommendation has the same importance as Recommendation #1.

1C. Re-coat the wall panels. Re-coating will cover repairs and will improve aesthetics.

Priority Two: Replace the Roof, Flashings, and Cap. Complete roof connections.

2A. Replace the Roof Membrane: The roof membrane is reaching the end of its useful life. Replace the existing rock-ballasted membrane with a fully adhered membrane, facilitating future roof inspections and maintenance.

2B. Replace the Wall Cap and Roof Flashing: As the roof is replaced, remove the wall cap, the timber blocking where rotten, and the membrane base flashing. Install a wall cap with a four inch minimum vertical lap over the top of the wall panel. Secure new membrane base flashing to the inside face of the wall and protect the flashing termination with metal counterflashing. At the time of roof flashing replacement, the roof plank to wall panel connection can be cleaned of surface corrosion and painted.

2C. Connect the Roof Planks where the Plank to Wall Connection was omitted. For proper lateral load transfer from the wall panels to the roof planks, all of the connections shown on the precast concrete shop drawings are required. Some were omitted. Inspect all of the roof plank connections during the re-roofing project, and complete the connections.

Priority Three: Re-secure the Wall Panel Bottom Connection.

3A. Replace the Bottom Wall Panel Connection: The bottom connections of the Wall Panels to the Footing exhibit surface corrosion and are buried in wet sand. The Wall Panel Bottom Connection can be replaced on the outside of the building. The new connection must be encased in concrete.

3B. Encase the Below-Grade Panel Joints in Concrete: As the bottom connections are encased in concrete, grout the Below-Grade Panel Joints to prevent moisture intrusion.

ENGINEERING RESOURCE ASSOCIATES, INC.
Consulting Engineers, Scientists & Surveyors

May 2015

Concrete Wall Panel Rehabilitation Cost Estimate
Champaign County Satellite Jail

The Rehabilitation Recommendations were prioritized for project planning purposes. A Cost Estimate for Construction and Engineering Fees was developed based upon those priorities. Each priority was assigned a separate contingency based upon the defined Scope of Work degree of certainty and based upon the degree of unknowns associated with existing building rehabilitation.

Accompanying this document is an itemized ledger of the Quantities, Unit Costs, and Totals. We wish to thank Advanced Commercial Roofing for providing the roof replacement estimate that is incorporated into the Cost Estimate. In summary, our preliminary opinion of probable costs is:

Priority One	Seal Cracks and Joints	$ 384,000
Priority Two	Roof Replacement and Connections	$ 775,000
Priority Three	Foundation Rehabilitation	$ 165,000
Total		$1,324,000

Engineering Fees are recommended to be budgeted at ten percent of the Cost Estimate for each priority.

Concrete Wall Panel Rehabilitation Cost Estimate

Task	Quantity	Units	Unit Cost	Total	Grand Total
Priority One: Seal Cracks & Joints					
Epoxy Injection and Routed Low Modulus Epoxy Repair	2,600	Lineal Feet	$60	$156,000	
Panel Joint Sealing	2,800	Lineal Feet	$20	$56,000	
Coating	23,000	Square Feet	$5	$115,000	
Contingency				$57,000	
Priority One Subtotal				$384,000	**$384,000**
Priority Two: Roof					
Re-Roofing		Advanced Roofing Quote		$581,000	
Flashing	2,800	Lineal Feet	$30	$84,000	
Connections	30	Each	$1,000	$30,000	
Contingency				$80,000	
Priority Two Subtotal				$775,000	**$775,000**
Priority Three: Foundation					
Excavation	200	Cubic Yards	$60	$12,000	
Concrete	90	Cubic Yards	$1,200	$108,000	
Reinforcing Bars	7,000	Pounds	$3	$21,000	
Contingency				$24,000	
Priority Three Subtotal				$165,000	**$165,000**
Grand Total					**$1,324,000**