COUNTY DEPARTMENT AGENDA REQUEST

Department:	Sheriff-Jail	Presenter(s):	Major Charles Cowart
Meeting Date:	Thursday, December 10, 2009	Type of Request:	New Business

Wording for the Agenda:

Consideration of staff's request to proceed with repairs to a specified portion of foundation and wall(s) at the Fayette County Jail.

Background/History/Details:

The ground beneath the foundation in one of the walls in an exercise has settled over time, causing walls & "I beams" to pull away from the main building as well as part of the concrete floor to crack and begin falling in.

We have involved Mallett Consulting, Inc. with consulting/diagnosing the problem and making recommendations for repairs. Recommended methods of repair and cost details are included in this packet from Nova Engineering/Environmental and Mallett Consulting, Inc. respectively.

If authorization is give to move forward with the repairs, bids will be solicited from contractors to perform the work. Funding is requested from the Contingency Fund.

What action are you seeking from the Board of Commissioners?

Authorization to engage Mallett Consulting, Inc. and Nova Engineering to evaluate conditions, prepare drawings and specifications, and solicit bids for repairs. Their work would include engineering and construction oversight of the project. Once bids are received, a recommendation for a bid award will be presented to the Board for approval.

If this item requires funding, please describe:

Projected total cost submitted by Mallett Consulting, Inc. is $161,800, which includes $125,000 in construction repair costs. Funds are being requested from the Contingency Fund.

Has this issue come before the Commissioners in the past?	No	If so, when?	
Do you need audio-visual for the presentation?	No	Back-up Material Submitted?	Yes

STAFF USE ONLY

Approved by Finance		Reviewed by Legal	Yes
Approved by Purchasing	Not Applicable	Approved by County Clerk	Yes
Administrator's Approval	Yes		

Staff Notes:

Mallett Consulting, Inc.

ENGINEERING - SURVEYING - PROJECT MANAGEMENT

101 DEVANT STREET, SUITE 804
FAYETTEVILLE, GEORGIA 30214
770-719-3333
770-719-3377 (fax)

Major Charles R. Cowart - Director
Fayette County Sheriff's Office - Jail Division
145 Johnson Avenue
Fayetteville, Georgia 30214

Re: Jail Housing Facilities - Exercise Yard "E"
Foundation Repairs

October 30, 2009

Dear Major Cowart:

Mallett Consulting, Inc. is pleased to offer our professional services for preparation of bid documents, including detailed plans and specifications, construction contract, insurance and bonding requirements along with project management and construction monitoring for the above referenced project. Proposed repair strategy will be in accordance with the recommendations made in the Soils Investigation Report recently prepared by Nova Engineering and Environmental, Inc. (Nova has provided a preliminary construction cost estimate of $125,000.00). Our project team will include architectural and structural design services by IPG, Inc. IPG, Inc provided similar services for the original design and construction of the Jail facility.

Proposed Fees are as follows:

1.	Design and preparation of Plans and Specifications:	$6400.00
2.	Project Management:	$1800.00
3.	Construction Monitoring: (32 Working Days)	Hourly (est. 3600.00)
4.	Reimbursables - printing, shipping, etc.:	at cost

This proposal does not include fees associated with geotechnical oversight and construction materials testing. Our office has been given a budget estimate of $25,000.00 from Nova Engineering and Environmental, Inc. for these services. Please feel free to call me to discuss this proposal further. We will wait for your authorization before proceeding with the work.

Sincerely,
Mallett Consulting, Inc.

David Jaeger, PE
President

NOVA
ENGINEERING AND
ENVIRONMENTAL

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Suite E
Kennesaw, Georgia 30144
770.425.0777 / Fax - 770.425.1113
www.usanova.com

September 15, 2009

FAYETTE COUNTY SHERIFF'S OFFICE C/O
MALLETT CONSULTING, INC.
101 Devant Street
Suite 804
Fayetteville, Georgia 30214

Attention: Mr. Alan Carver
Resident Engineer Inspector

Subject: Report of Limited Subsurface Exploration
and Geotechnical Engineering Evaluation
FAYETTE COUNTY JAIL
Fayette County, Georgia
NOVA Project Number 2009050

Dear Mr. Carver:

NOVA Engineering and Environmental, LLC (NOVA) has completed the authorized limited subsurface exploration and geotechnical engineering evaluation for the Fayette County Jail located in Fayetteville, Georgia. The work was performed in general accordance with NOVA Proposal Number 04777.1-G, dated August 28, 2009. This letter report briefly discusses our understanding of the project at the time of the subsurface exploration, describes the limited geotechnical consulting services provided by NOVA, and presents our findings, conclusions and recommendations.

SITE AND PROJECT INFORMATION

Our understanding of the requirements of the project is based on conversations with you and the provided information (Fayette County Exercise Yard Beam Movement and Fayette County Jail Foundation Failure (settling) reports with pictures dated August 25, 2009 and June 17, 2009).

The site is currently developed as an existing detention facility with associated surface parking and drive areas. NOVA understands that an existing concrete wall located along Exercise Yard "E" has experienced some differential movement in both the vertical and horizontal (rotational) directions. This outward rotation has created an approximately ¾ inch gap between Beam #2 and

the South Inside Wall. Some cracking of the wall and the adjacent concrete slab has also been documented. A corner bracket for the overhead fencing has detached from the concrete wall as a result of the differential movement at the top of the wall.

GEOTECHNICAL SERVICES

The Fayette County Sheriff's Office c/o Mallett Consulting, Inc. engaged NOVA to provide geotechnical engineering consulting services for the Fayette County Jail. This report briefly discusses our understanding of the project, describes our limited exploratory procedures and presents our findings, conclusions and recommendations.

The services were performed substantially as outlined in our proposal number 04777.1-G, dated August 28, 2009, and in general accordance with industry standards.

As authorized per the above referenced proposal, the completed geotechnical report was to include:

- A description of the site, fieldwork, laboratory testing and general soil conditions encountered, as well as a Boring Location Plan, and individual Boring Records.
- Discussion on potential construction issues indicated by the exploration, such as the condition of the existing subsurface conditions and relative density as defined by the "N" values, etc.
- Recommended repair option to stabilize the existing shallow foundation supporting the concrete wall.
- Recommended quality control measures (i.e. sampling, testing, and inspection requirements) for remedial operations and backfilling.

The assessment of the presence of wetlands, floodplains or water classified as State Waters of Georgia was beyond the scope of this study. Additionally, the assessment of site environmental conditions, including the detection of pollutants in the soil, rock or groundwater, at the site was also beyond the scope of this geotechnical study. If desired by the client, NOVA can provide these services.

FIELD AND LABORATORY PROCEDURES

A Boring Location Plan is attached to this letter. Boring locations were established in the field by NOVA personnel using the provided site plan, and estimating distances and angles from site landmarks. Underground utility related adjustments of the boring locations were made at the time of the field exploration. Consequently, referenced boring locations are approximate. If increased accuracy is desired by the client, NOVA recommends that the boring locations and elevations be surveyed.

Our field exploration was conducted on September 9, 2009 and included three soil test borings (B-1 through B-3) drilled to a depth of 20 feet below the existing ground surface. All drilling and sampling operations were performed in general accordance with ASTM designations.

Test Boring Records attached to this letter show the standard penetration test (SPT) resistances, or "N- values", and present the soil conditions encountered in the borings. These records represent our interpretation of the subsurface conditions based on the field exploration data, visual examination of the split-barrel samples, and generally accepted geotechnical engineering practices. The stratification lines and depth designations represent approximate boundaries between various subsurface strata. Actual transitions between materials may be gradual.

The groundwater levels reported on the Test Boring Records represent measurements made at the completion of the soil test boring. The soil test borings were subsequently backfilled with the soil cuttings.

Split-barrel samples were returned to our testing laboratory, where they were classified using visual/manual methods in accordance with the Unified Soil Classification System (USCS) and ASTM designations. The descriptions presented in the Test Boring Records attached to this letter should be considered approximate. Further laboratory testing was beyond the scope of this exploration.

SUBSURFACE CONDITIONS

The soil test borings encountered 2 inches of topsoil. Beneath the topsoil, fill was encountered in borings B-2 and B-3 to depths of 6 and 11 feet below the ground surface, respectively. Sampled fill consisted of sandy SILT. Some of the fill samples contained small rock fragments and root fragments. Standard penetration resistances in the fill varied from 2 to 14 blows per foot (bpf), but may have been amplified by the presence of rock fragments. Residual soils were encountered in all of the borings beneath the fill or topsoil. Sampled residuum generally consisted of sandy CLAY and sandy SILT. Standard penetration in the residual soils ranged from 2 to 23 bpf, but more typically varied from 12 to 16 bpf. Groundwater was not encountered in any of the borings to their termination depth of 20 feet.

CONCLUSIONS AND RECOMMENDATIONS

The following conclusions and recommendations are based on our understanding of the project requirements, site observations, our evaluation and interpretation of the field data obtained during this exploration, our experience with similar subsurface conditions, and generally accepted geotechnical engineering principles and practices.

Subsurface conditions in unexplored locations or at other times may vary from those encountered at specific boring locations.

As previously noted, boring locations were established by estimating distances and angles from site landmarks. If increased accuracy is desired by the client, we recommend that the boring locations and elevations be surveyed.

Very soft fill materials were encountered in boring B-3. Although not encountered in boring B-2, which was performed at the corner of the wall where separation has taken place, it is possible that the very soft fill materials extend to the vicinity of boring B-2 (i.e. the northeast corner of Exercise Yard "E"). NOVA did not enter the jail facility; however, based upon the photographs provided, a portion of the floor slab has also settled, as well as the wall foundation.

It is our opinion that the fill material in this area appears to be in the process of consolidating under its own weight due to its loose nature (N values of 2 to 8 bpf). In addition, consolidation of the fill beneath the wall foundation due to the structural loads imposed by the wall may be exacerbating the settlements.

We recommend that the remedial repair work for Exercise Yard "E" consist of underpinning the foundations that have settled and low-pressure grouting the distressed area beneath the concrete slab inside the wall. The underpinning may consist of the installation of mini-piles, helical foundations, or equivalent foundation underpinning system. We envision that the low-pressure grouting needs to extend down to depths of approximately 6 to 12 feet in order to stabilize the area.

Several underpinning options are technically feasible; however, we believe the use of helical anchors installed to the required torque will be the most effective solution to stabilize the wall foundation. The actual underpinning program should be provided as a design/build contract by a specialty contractor.

Typical low-pressure grouting programs consist of installing a series of exploratory holes based on the anticipated grouting requirements. The initial grout injection points are usually on 6 to 8-foot centers. If excessive grout takes occur during the grouting of these holes, then intermediate injection points approximately halfway between the initial points can be installed. The actual pressure grouting program is typically provided as a design/build contract by a specialty grouting contractor. NOVA can assist you with contacting specialty grouting contractors in this area that are familiar with this type of grouting program.

We appreciate your selection of NOVA and the opportunity to be of service on this project. If you have any questions, or if we may be of further assistance, please do not hesitate to contact us.

Sincerely,
NOVA ENGINEERING AND ENVIRONMENTAL, LLC

Wayne M. Shelburne, Ph.D., P.E.
Project Engineer
GA PE License # 31295

Brian A. Grinstead, P.E.
Geotechnical Engineering Manager
GA PE License # 25470

GEORGIA REGISTERED NO 25470 PROFESSIONAL ENGINEER BRIAN A. GRINSTEAD

Attachments: Boring Location Plan
Soil Test Boring Logs

APPROXIMATE LOCATION OF CURRENT NOVA BORINGS

BORING LOCATION PLAN	NOVA ENGINEERING AND ENVIRONMENTAL	FAYETTE COUNTY SHERIFF'S OFFICE C/O MALLET CONSULTING, INC. Fayette County Jail Fayetteville, Fayette County, Georgia NOVA Project 2009050

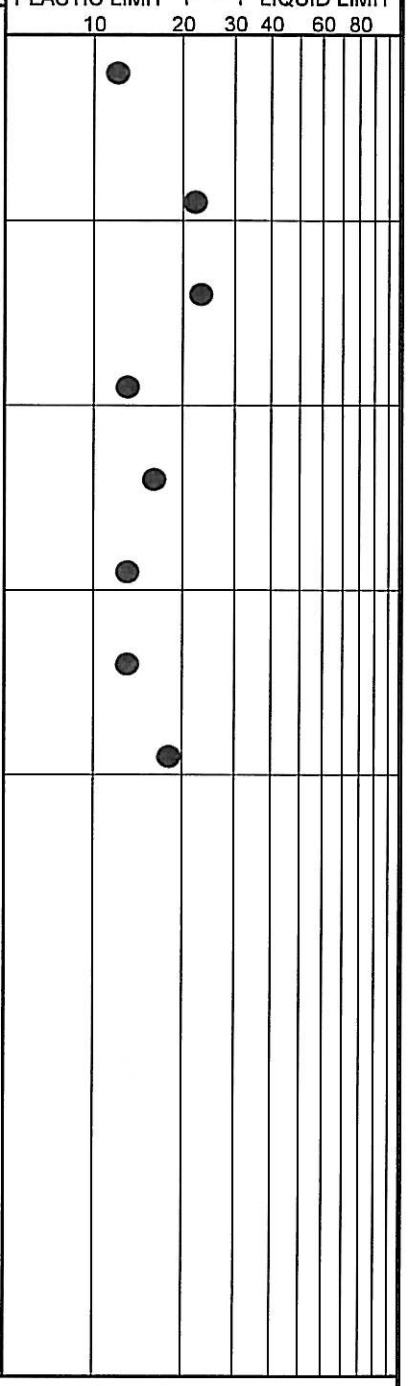
NOVA
ENGINEERING AND ENVIRONMENTAL

TEST BORING RECORD B-1

PROJECT: Fayette County Jail **PROJECT NO.:** 2009050
CLIENT: Fayette County Sheriff's Office c/o Mallett Consulting, Inc.
PROJECT LOCATION: Fayetteville, Georgia
LOCATION: Outside Exercise Yard "E" **ELEVATION:**
DRILLER: Sunrise Drilling Company **LOGGED BY:** W. Shelburne
DRILLING METHOD: Hollow Stem Auger **DATE:** 9-9-09
DEPTH TO - WATER> INITIAL: N/E **AFTER 24 HOURS:** N/O **CAVING>** C

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample No.	Sample Type	Blow Counts
0		TOPSOIL: 2 inches					
		RESIDUUM: Stiff to very stiff red brown fine sandy CLAY					12
5							22
							23
		Stiff black orange brown fine sandy SILT					
10							13
		Stiff to very stiff black tan purple slightly micaceous fine sandy SILT					16
15							13
							13
20							18
		Boring Terminated at 20 ft.					
25							
30							
35							

Graphic Depiction



This information pertains only to this boring and should not be interpreted as being indicative of the site.

N/O - Soil test borings were dry and backfilled immediately upon completion, so 24 hour water levels were Not Obtained.

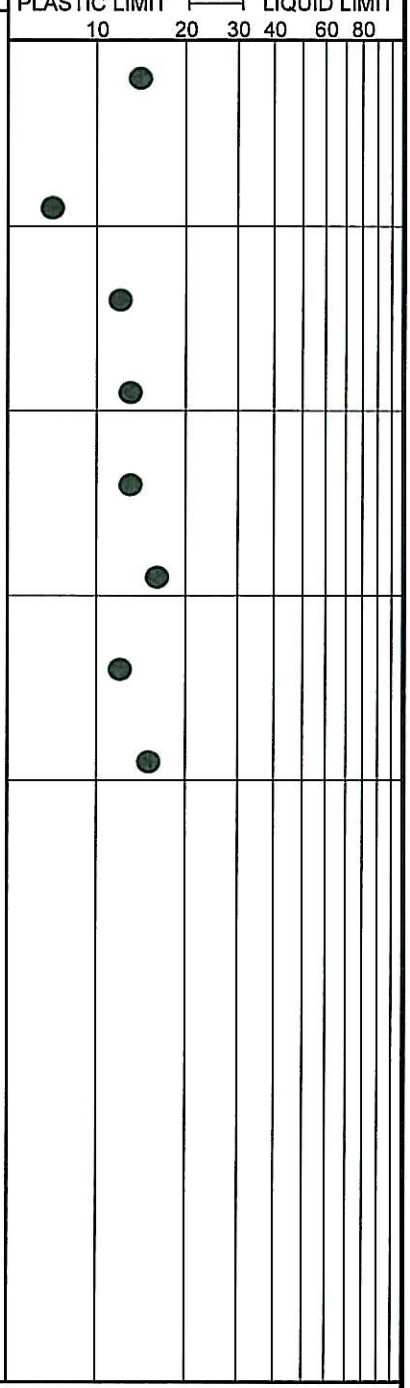
NOVA
ENGINEERING AND ENVIRONMENTAL

TEST BORING RECORD B-2

PROJECT: Fayette County Jail **PROJECT NO.:** 2009050
CLIENT: Fayette County Sheriff's Office c/o Mallett Consulting, Inc.
PROJECT LOCATION: Fayetteville, Georgia
LOCATION: Outside Exercise Yard "E" **ELEVATION:**
DRILLER: Sunrise Drilling Company **LOGGED BY:** W. Shelburne
DRILLING METHOD: Hollow Stem Auger **DATE:** 9-9-09
DEPTH TO - WATER> INITIAL: ▽ N/E **AFTER 24 HOURS:** ▽ N/O **CAVING>** C

Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample No.	Sample Type	Blow Counts
0		TOPSOIL: 2 inches					
		FILL: Stiff red brown slightly micaceous fine sandy SILT with rock fragments					14
		Firm red brown slightly micaceous fine sandy SILT with small root fragments					
5							5
		RESIDUUM: Stiff to very stiff black tan purple slightly micaceous fine sandy SILT					12
10							13
							13
15							16
		Stiff black orange tan micaceous fine sandy SILT					12
20		Stiff to very stiff black tan purple slightly micaceous fine sandy SILT					15
		Boring Terminated at 20 ft.					
25							
30							
35							

Graphic Depiction



This information pertains only to this boring and should not be interpreted as being indicative of the site.

N/O - Soil test borings were dry and backfilled immediately upon completion, so 24 hour water levels were Not Obtained.

NOVA
ENGINEERING AND ENVIRONMENTAL

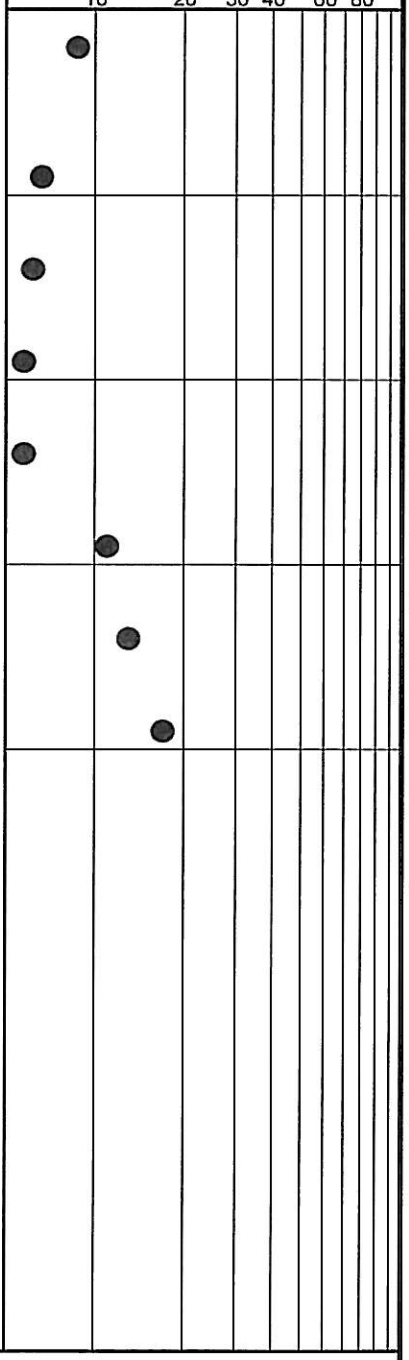
TEST BORING RECORD B-3

PROJECT: Fayette County Jail **PROJECT NO.:** 2009050
CLIENT: Fayette County Sheriff's Office c/o Mallett Consulting, Inc.
PROJECT LOCATION: Fayetteville, Georgia
LOCATION: Outside Exercise Yard "E" **ELEVATION:**
DRILLER: Sunrise Drilling Company **LOGGED BY:** W. Shelburne
DRILLING METHOD: Hollow Stem Auger **DATE:** 9-9-09
DEPTH TO - WATER> INITIAL: N/E **AFTER 24 HOURS:** N/O **CAVING>**

This information pertains only to this boring and should not be interpreted as being indicative of the site.

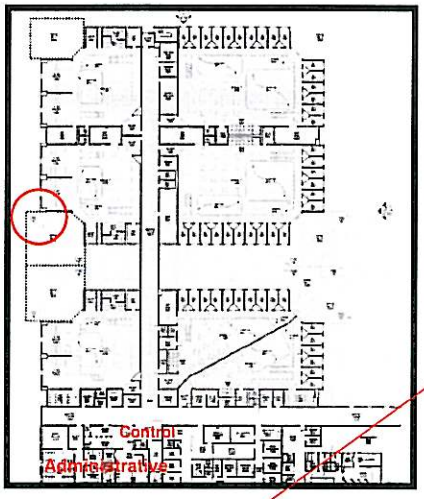
Depth (feet)	Elevation (ft-MSL)	Description	Graphic	Groundwater	Sample No.	Sample Type	Blow Counts
0		TOPSOIL: 2 inches					
		FILL: Soft to very soft red brown slightly micaceous fine sandy SILT					8
5							4
							3
10							2
		RESIDUUM: Very soft to very stiff black tan purple slightly micaceous fine sandy SILT					2
15							11
							13
20							17
		Boring Terminated at 20 ft.					
25							
30							
35							

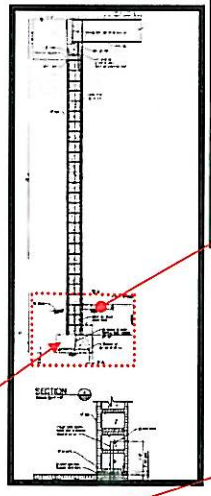
Graphic Depiction

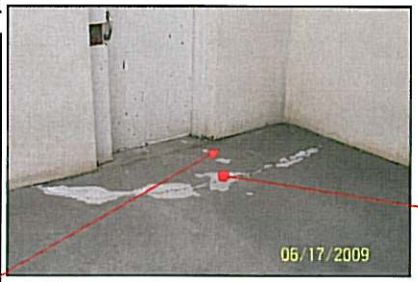


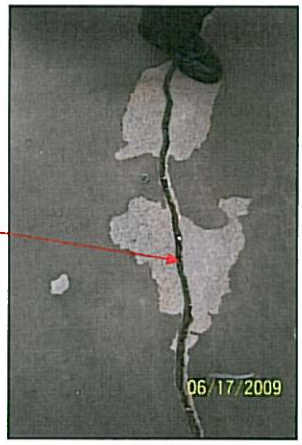
N/O - Soil test borings were dry and backfilled immediately upon completion, so 24 hour water levels were Not Obtained.

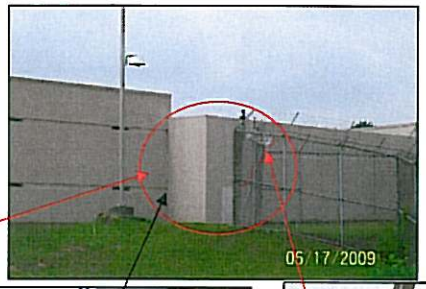
Fayette County Jail Foundation Failure (settling)

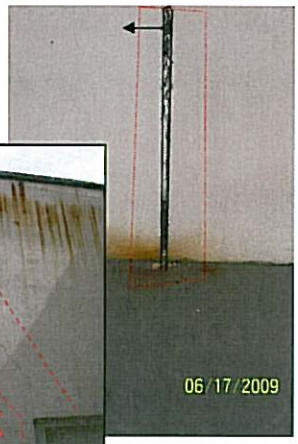


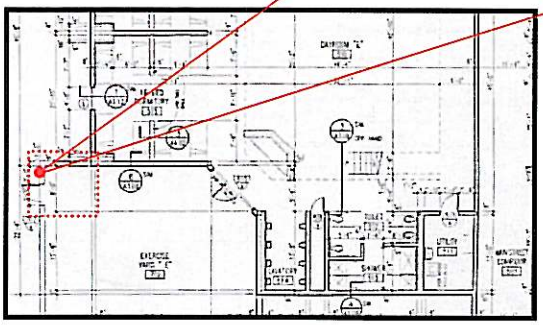


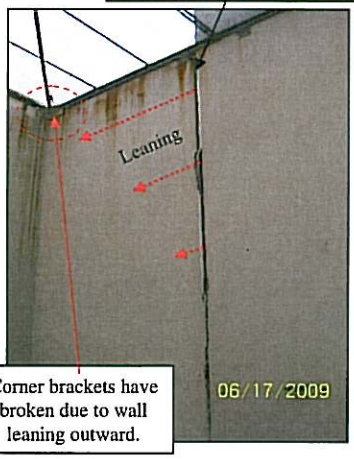


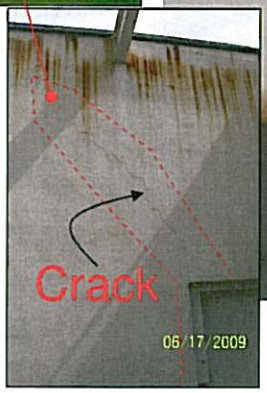








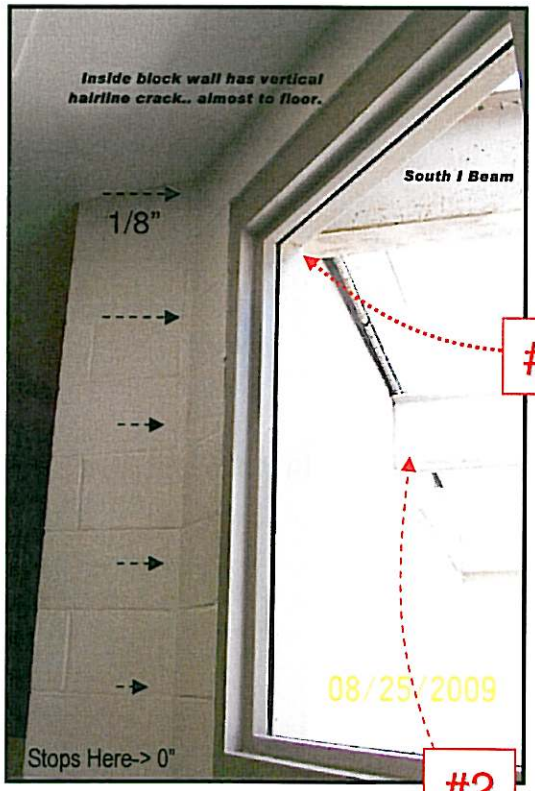




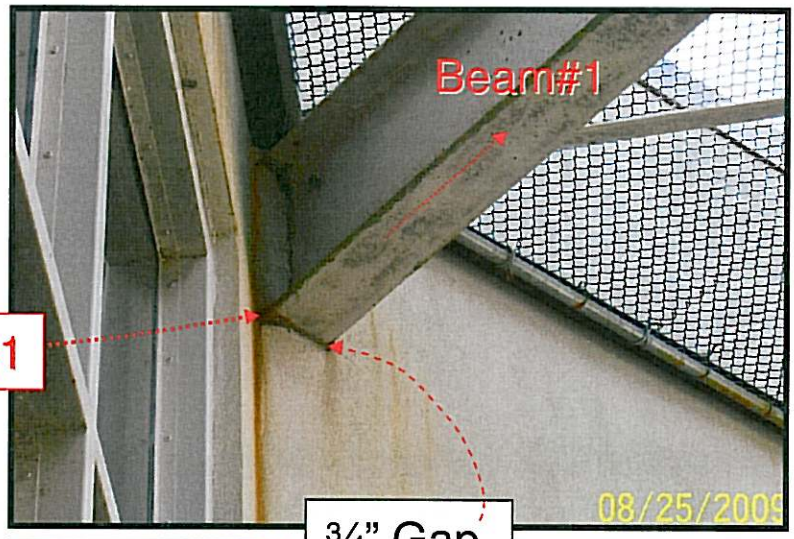
702-Exercise Yard "E"

Corner brackets have broken due to wall leaning outward.

Fayette County Jail Exercise Yard Beam Movement



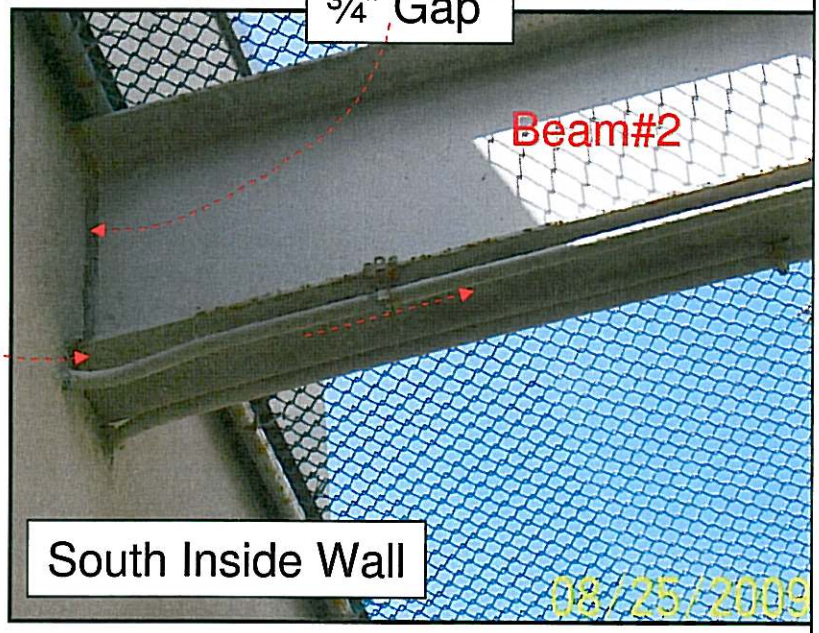
Inside block wall crack (zoom to see crack)

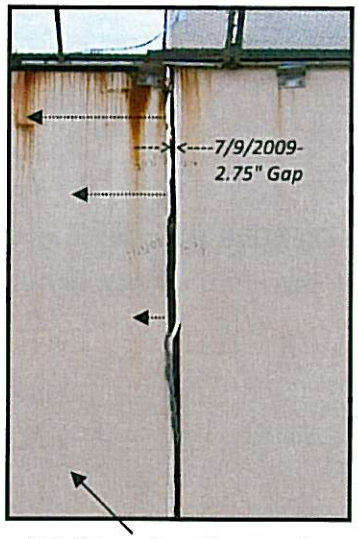
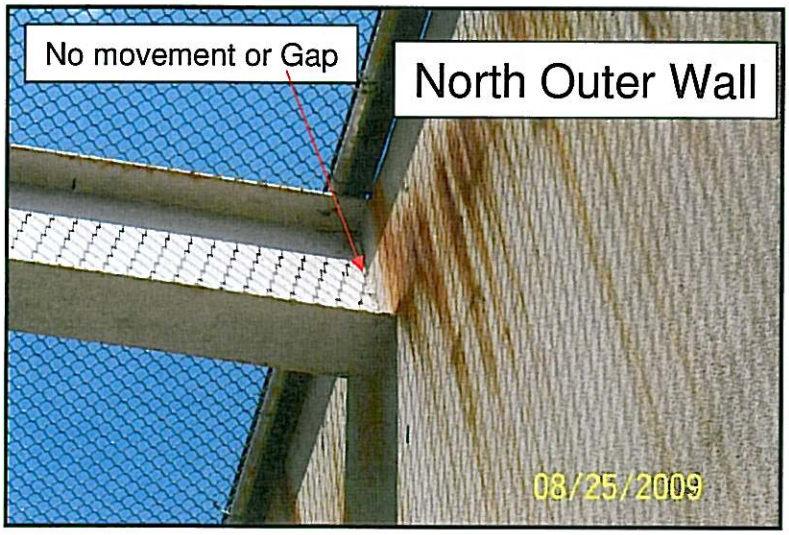


#1

¾" Gap

#2





Wall Leaning Outward