November 4, 2014

Heidi Hubble
Facilities and Services
MSC 3545
New Mexico State University
P.O. Box 30001
Las Cruces, NM 88003

Re: Horse Farm, Livestock Office, and Horticulture Shed Cost Evaluation Report, Revised to address comments

Dear Ms. Hubble:

Bohannan Huston, Inc. (BHI) has completed the evaluation of the Horse Farm Office, the Livestock Office, and the Horticulture Shed. The evaluation includes cost estimates to renovate, demolish, and replace the three buildings as well as our recommendation to NMSU of how to proceed based on those costs. The project background, observed deficiencies, cost estimates and recommendation summary are included in the following sections.

PROJECT NEED

The Horse Farm Office, Livestock Office and Horticulture Shed are three NMSU buildings in need of repairs in order to stay in service. Because of the extensive nature of some of the needed repairs an evaluation of the cost to repair, demolish and replace the building is necessary to give NMSU an idea of the most cost-effective way to proceed. None of the buildings are registered historical structures and do not require special consideration for renovation techniques or demolition. However, the Horticulture Shed has been identified by NMSU as having historical significance to the campus and any repairs or renovations should match the existing construction as closely as possible. The Horse Farm Office is constructed of adobe and it is strongly recommended that traditional adobe construction techniques by a knowledgeable contractor be used if NMSU chooses to renovate this building because they would ensure the longest lasting structure.

BUILDING BACKGROUND AND DEFICIENCIES

Horse Farm Office

The Horse Farm Office was built in at least two phases around 1935, but is not considered to have any historical significance by NMSU's architecture department. However, the Horse Farm Office is an unusually large size for an adobe structure. It is currently unused, with the exception of the tack room which houses saddles and other tack equipment for the Horse Farm. The building covers 6,011 square feet and the exterior and interior walls of the Horse Farm Office are constructed of adobe. The exterior of the building is covered with stucco, which has cracked and fallen away in some areas as a result of moisture infiltration into the exterior. The roof is uninsulated and constructed of timber framing with corrugated metal sheeting. The

metal sheeting is not water tight and rain damage is visible on the interior timber framing and by erosion on the unfinished adobe interior walls.

The interior adobe walls are exhibiting damage at their bases where concrete facing was installed at the wall bases at a previous attempt to repair water damage. Concrete speeds up deterioration of adobe and is not recommended to be used in contact with adobe walls. The concrete facing has prevented the adobe walls from "breathing" when they absorb moisture and so moisture has to travel farther up the wall to evaporate into the atmosphere which damages the adobe. The damage is exacerbated where water pools on the building interior because of the leaking roof. Site drainage around the building is very poor and allows water to pool near the exterior walls in several locations which is then absorbed by the adobe walls which causes damage to the structure. The concrete floor of the building is in relatively good shape with some minor cracking.

The farm office has an interior office, restroom, kitchen/laboratory, and storage area with plastered or drywall interior walls. With the exception of the kitchen/laboratory which has its own separate roof structure within the larger building, all of the finished rooms show significant rain damage also. **Figure 1** shows a floor plan of the Horse Farm Office.

While outside the scope of work for these cost-estimates, BHI also looked at the adjacent adobe Horse Farm Paddock which was built around the same time as the Horse Farm Office. This open structure covers 5,048 square feet and has similar problems with storm water drainage and has a leaking water trough that is causing even more serious problems with sections of the walls than were observed in the Horse Farm Office. In one of the stalls, the wall has been completely undermined by damage from the leaking water trough and is in danger of failing if repair is not undertaken soon. BHI strongly recommends that NMSU consider repairing this structure as well before sections of it start to collapse.

Livestock Office

The Livestock Office was built in 1956, and is not considered to have any historical significance by NMSU's architecture department. The Livestock Office covers 7,383 square feet and is actually two separate structures built adjacent to each other. The interior and exterior walls are constructed of CMU. The exterior is finished with stucco, and most of the interior walls are painted or plastered. The exterior stucco is in very poor shape and is peeling away.

There is evidence of settlement cracking throughout the building in both the interior and exterior walls. The roof of the 2,018 square foot dairy milking room is exhibiting large deflections due to water damage caused by a severely deteriorated roof. Water damage was observed throughout the remainder of the building, indicating that the entire roof is likely in similar shape. The building is known to have asbestos in some of the wall and ceiling materials and it is possible that there may be mold contamination in the building due to the prolonged water leaks in the roof. There was a fire at some point in the north part of the building, but the roof supporting members have since been reinforced with new lumber and appear structurally sound.

A custodial office and adjoining restroom were renovated within the last five years and appear watertight, though some evidence of minor settlement cracking on

interior, non-bearing walls is visible inside the renovated area. **Figure 2** shows a floor plan of the Livestock Office.

Rooms 009, 010, and 020 are a hay storage area, an unused chicken coop, and an unused dairy milking room respectively. These rooms were specifically designed and laid out for their original purposes. If the Agricultural Department doesn't intend to use them again as agricultural facilities, it is recommended that these rooms be demolished rather than renovated if NMSU decides to renovate this building rather than demolish or replace it.

Horticulture Shed

The Horticulture Shed was built in 1948 and is considered by NMSU to have historical significance to the campus. The Shed is a 2,189 square foot building with brick walls, cast-in-place concrete lintels and timber truss roof framing. The brick walls appear to be constructed on a continuous concrete stem wall foundation. The building has a raised wooden floor. The shed is uninsulated and has an unfinished interior. There is evidence of differential foundation settlement on the entire south wall, particularly pronounced in the southeast and southwest corners of the building. Although the settlement cracking is pronounced on the building exterior, there is no apparent distress to the interior building framing or floor. The settlement cracks have been visible for at least five years, but were not reported to have been widening since that time. There is also evidence of shear cracking at the corners of the four crawl space entrances spaced around the building exterior. **Figure 3** shows a floor plan of the Horticulture Shed.

COST ESTIMATES - DEMOLITION

Tables 1, **2** and **3** contain cost estimates to demolish each of the three buildings. The Horse Farm Office and Livestock Office would also require asbestos abatement in order to demolish them. NMSU obtained quotes from two contractors for asbestos abatement and demolition of the Horse Farm Office and Livestock Office buildings. Where two quotes for the same work was obtained, the lower quote was used in the table. It is assumed that no asbestos abatement is required for demolition of the Horticulture Shed. The cost to demolish the Horticulture Shed was based on the square footage costs for the other two buildings.

Table 1. Horse Farm Office Demolition Cost Estimate

Description	Unit	Quantity	Unit Price	Total Cost
Removal and disposal of 29 SF of asbestos containing ceiling materials in Room 8	LS	1	$631	$631
Demolition and disposal of adobe structure, includes demolition of slabs and footings, removal of utilities back to property line, clean rough graded finished lot	LS	1	$45,150	$45,150
Subtotal				$45,781
NMGRT (6.375%)				$2,919
Total Demolition Cost Estimate				**$48,699**

Table 2. Livestock Office Demolition Cost Estimate

Description	Unit	Quantity	Unit Price	Total Cost
Removal and disposal of 331 SF of floor tile and mastic, 369 SF of ceiling mastic, 6,072 SF exterior stucco wall	LS	1	$24,500	$24,500
Demolition and disposal of CMU structure, includes demolition of slabs and footings, removal of utilities back to property line, clean rough graded finished lot	LS	1	$39,500	$39,500
Subtotal				$64,000
NMGRT (6.375%)				$4,080
Total Demolition Cost Estimate				**$68,080**

Table 3. Horticulture Shed Demolition Cost Estimate

Description	Unit	Quantity	Unit Price	Total Cost
Demolition and disposal of brick structure, includes demolition of slabs and footings, removal of utilities back to property line, clean rough graded finished lot	SF	2,189	$7.51	$16,442
Subtotal				$16,442
NMGRT (6.375%)				$1,048
Total Demolition Cost Estimate				**$17,490**

COST ESTIMATES - REPLACEMENT

Tables 4, **5** and **6** contain cost estimates to demolish and rebuild each building to an equivalent square footage. It is assumed that all buildings will be replaced with a rigid frame metal building exterior on a concrete spread footing foundation. The cost estimates will be for a fully finished structural shell, including electrical and mechanical systems. The cost to partition the interior space into individual classrooms and offices would likely add an addition $25 per square foot. The estimated cost for asbestos removal at the Horse Farm Office and the Livestock Office are included in the estimates. Site grading to improve drainage at the Horse Farm Office site and the adjacent paddock are included in **Table 4**.

Table 4. Horse Farm Office Replacement Cost Estimate

Description	Unit	Quantity	Unit Price	Total Cost
Removal and disposal of 29 SF of asbestos containing ceiling materials in Room 8	LS	1	$631	$631
Demolition and disposal of adobe structure, includes demolition of slabs and footings, removal of utilities back to property line, clean rough graded finished lot	LS	1	$45,150	$45,150
Construct new concrete, spread footing foundation and interior slab	SF	6,011	$45	$270,495
Install new metal building with finished interior, electrical and mechanical systems	SF	6,011	$80	$480,880
Site improvements to drain storm water away from and around new building and existing paddock, including removal and replacement of existing fencing	LS	1	$20,000	$20,000
Subtotal				$817,156
Contingency, 5%				$40,858
Architectural/Engineering Services, 5%				$42,901
NMGRT (6.375%)				$57,433
Total Replacement Cost Estimate				**$958,347**

Table 5. Livestock Office Replacement Cost Estimate

Description	Unit	Quantity	Unit Price	Total Cost
Removal and disposal of 331 SF of floor tile and mastic, 369 SF of ceiling mastic, 6,072 SF exterior stucco wall	LS	1	$24,500	$24,500
Demolition and disposal of CMU structure, includes demolition of slabs and footings, removal of utilities back to property line, clean rough graded finished lot	LS	1	$39,500	$39,500
Construct new concrete, spread footing foundation and interior slab	SF	7,383	$45	$332,235
Install new metal building with finished interior, electrical and mechanical systems	SF	7,383	$80	$590,640
Subtotal				$986,875
Contingency, 5%				$49,344
Architectural/Engineering Services, 5%				$51,811
NMGRT (6.375%)				$69,362
Total Replacement Cost Estimate				**$1,157,392**

Table 6. Horticulture Shed Replacement Cost Estimate

Description	Unit	Quantity	Unit Price	Total Cost
Demolition and disposal of brick structure, includes demolition of slabs and footings, removal of utilities back to property line, clean rough graded finished lot	SF	2,189	$7.51	$16,442
Construct new concrete, spread footing foundation and interior slab	SF	2,189	$45	$98,505
Install new metal building with finished interior, electrical and mechanical systems	SF	2,189	$80	$175,120
Subtotal				$290,067
Contingency, 5%				$14,503
Architectural/Engineering Services, 5%				$15,229
NMGRT (6.375%)				$20,387
Total Replacement Cost Estimate				**$340,186**

COST ESTIMATES - REPAIR

Tables 7, **8a**, **8b**, and **9** contain cost estimates to refurbish each of the existing buildings, based on the observed deficiencies and measured quantities. The cost estimates are based on typical remodeling costs by quantity of each type of repair. The asbestos abatement cost is included in the repair cost estimate for the Horse Farm and Livestock Office since this work would be required to make the necessary repairs. Site grading to improve drainage at the Horse Farm Office and the adjacent adobe paddock are included in **Table 7**. Costs to repair the Horse Farm Paddock are not included in the **Table 7**, but the Paddock contains approximately 420 linear feet of adobe walls, which would add an additional $42,000 to $50,400 if repair of these walls were added to the renovation project.

There are two tables for the Livestock Office repair. **Table 8a** assumes the entire existing building is renovated, including the existing hay storage, abandoned chicken coop and abandoned dairy milking room are all renovated to be used for storage or office space. **Table 8b** assumes that the existing hay storage, chicken coop and dairy milking room will be demolished since they will likely not be used for their original purposes again and the rest of the building will be renovated as office/storage space. Cost to stabilize the settlement cracking noted in the custodial area are not included as the cracks are minor and in non-bearing walls.

Table 7. Horse Farm Office Renovation Cost Estimate

Description	Unit	Quantity	Unit Price	Total Cost
Removal and disposal of 29 SF of asbestos containing ceiling materials in Room 8	LS	1	$631	$631
Replace full corrugated metal roof over rigid insulation	SF	6,012	$7.50	$45,090
Replace failed and bowed wooden roof framing	LS	1	$10,000	$10,000
Replace lighting and wiring	LS	1	$40,000	$40,000
Remove concrete facing at base of adobe walls, remove and remud bottom 1 to 2 feet of deteriorated adobe walls	LF	610	$100	$61,000
Repair exterior stucco	LS	1	$15,000	$15,000
Repair cracked floors	LS	1	$17,600	$17,600
Replace deteriorated drywall and paint finished rooms	LS	1	$800	$800
Repair bathroom floor, misc. demolition	LS	1	$4,000	$4,000
Site improvements to drain storm water away from and around adobe building, including removal and replacement of existing fencing	LS	1	$25,000	$25,000
Subtotal				$219,121
Contingency, 20%				$43,824
Architectural/Engineering Services, 10%				$26,300
NMGRT (6.375%)				$18,439
Total Renovation Cost Estimate				**$307,684**

Table 8a. Livestock Office Renovation Cost Estimate (includes renovation of Hay Storage, Chicken Coop and Dairy Room)

Description	Unit	Quantity	Unit Price	Total Cost
Removal and disposal of 331 SF of floor tile and mastic, 369 SF of ceiling mastic, 6,072 SF exterior stucco wall	LS	1	$24,500	$24,500
New EPDM membrane roof over rigid insulation, new ceiling insulation	SF	7,383	$5.50	$40,607
Supporting framing replacement on Room 020	LS	1	$10,000	$10,000
Replaster walls throughout building	SF	5,620	$3.15	$17,703
Repair flooring throughout building	SF	2,553	$4.90	$12,512
Replace ceiling in damaged areas	LS	1	$2,000	$2,000
Replace drywall	LS	1	$200	$200
Repaint damaged rooms	LS	1	$4,750	$4,750
Remove and replace exterior stucco	LS	1	$60,000	$60,000
Misc. demolition	LS	1	$5,500	$5,500
Subtotal				$177,772
Contingency, 20%				$35,554
Architectural/Engineering Services, 10%				$21,300
NMGRT (6.375%)				$13,600
Total Renovation Cost Estimate				**$248,225**

Table 8b. Livestock Office Renovation Cost Estimate (included demolition of Hay Storage, Chicken Coop and Dairy Room)

Description	Unit	Quantity	Unit Price	Total Cost
Removal and disposal of 331 SF of floor tile and mastic, 369 SF of ceiling mastic, 6,072 SF exterior stucco wall	LS	1	$24,500	$24,500
Demolish rooms 009, 010 and 020	SF	2,670	$8.00	$21,360
New EPDM membrane roof over rigid insulation, new ceiling insulation	SF	4,713	$5.50	$25,922
Replaster walls throughout building	SF	3,640	$3.15	$11,466
Repair flooring throughout building	SF	527	$4.90	$2,582
Replace ceiling in damaged areas	LS	1	$2,000	$2,000
Replace drywall	LS	1	$200	$200
Repaint damaged rooms	LS	1	$4,750	$4,750
Remove and replace exterior stucco	LS	1	$60,000	$60,000
Misc. demolition	LS	1	$5,500	$5,500
Subtotal				$158,280
Contingency, 20%				$31,656
Architectural/Engineering Services, 10%				$19,000
NMGRT (6.375%)				$12,108
Total Renovation Cost Estimate				**$221,044**

Table 9. Horticulture Shed Renovation Cost Estimate

Description	Unit	Quantity	Unit Price	Total Cost
Deep bore geotechnical investigation to locate bearing layer for helical piers	LS	1	$3,000	$3,000
Install helical piers under sections of wall exhibiting settlement	LF	60	$500	$30,000
Repair cracks in existing brick wall	LF	60	$10	$600
Subtotal				$30,600
Contingency, 10%				$3,060
Architectural/Engineering Services, 10%				$3,400
NMGRT (6.375%)				$2,146
Total Renovation Cost Estimate				**$39,206**

CONCLUSIONS AND RECOMMENDATIONS

From the preliminary cost estimates in **Tables 1** through **9**, it is our opinion that it would be more cost-effective to renovate all of the buildings rather than demolish and rebuild them to an equivalent square footage. The following paragraphs outline our reasoning for each building. All of the buildings appear stable and safe to occupy, though the roof in the Milking Room of the Livestock office, and areas of obvious deterioration in the walls of the Horse Farm Office should be monitored.

Horse Farm Office

The Horse Farm Office is unusually large for an adobe structure and fits well with the cultural heritage of the College of Agriculture and the surrounding area. BHI consulted an adobe renovations expert who believed the building, while in need of extensive repair, is not beyond saving. Most of the deteriorated adobe is less than 4 inches deep in the walls and is repairable. The majority of the problems with the existing building are caused by poor site drainage which allows water to pool next to the adobe exterior walls and the leaking roof. Repairs to the walls have been attempted in the past by pouring a concrete facing at the base of the building's interior walls as an attempt to shore up the wall bases. However, the concrete has only exasperated these problems since moisture in the walls has to travel higher up the walls before it can escape to the atmosphere.

If NMSU chooses to renovate the Horse Farm Office, it is necessary that only traditional adobe construction methods and a qualified contractor be used to perform the work to ensure a long life for the structure. Using traditional materials will allow moisture that gets into the walls from the building foundation to escape to the atmosphere before it can travel up the walls and cause damage to the structure. Use of non-compatible building materials with adobe will speed up deterioration of the building. It will also be necessary to survey the site, locate an appropriate off-site storm water discharge location or retention ponding area, and construct swales around the site to allow for proper removal of storm water. These tasks would need to be done if the building is replaced with a new structure also.

While outside the scope of work for these cost-estimates, BHI also looked at the adjacent adobe hay storage/paddock area which was built around the same time as the Horse Farm Office. This structure has similar problems with storm water drainage and has a leaking water trough that is causing even more serious problems with sections of the walls than were observed in the Horse Farm Office. In one of the stalls, the wall has been completely undermined and is in danger of failing if repair is not undertaken soon. BHI strongly recommends that NMSU consider repairing this structure as well before sections of it start to collapse.

Livestock Office

The majority of the problems with the Livestock Office have arisen from the leaking roof. With a new roof, the structure could still be viable as a storage facility and office space but it in need of extensive cleaning and updating. There is also some asbestos abatement that will need to take place before any renovations are completed.

The Livestock Office contains a hay storage room, an abandoned chicken coop and an abandoned dairy milking room (Rooms 009, 010 and 020). If NMSU chooses to renovate this building and does not intend to use those rooms for their original intended purposes, it is

recommended that these three rooms be demolished and the rest of the building renovated because they would be awkward spaces to try to re-purpose as classrooms, offices or storage spaces.

Horticulture Shed

The Horticulture Shed is adequate for its intended purpose. It is experiencing settlement on the south wall which should be stabilized if possible. It is likely the settlement is caused by a sublayer compacting due to a drop in the water table. BHI recommends a geotechnical investigation be completed near this wall to try to determine the cause of the settlement and an adequate bearing layer somewhere below the foundation. If an adequate bearing layer is found under the structure, helical piers can be installed along the wall experiencing settlement to transfer the bearing load from the soft layer to a deeper layer. The cracks can then be repaired to restore the aesthetic appearance of the building. The materials used to stabilize the wall will be buried and will not affect the historical appearance of the building.

Please let me know if you have any questions or need additional information.

Sincerely,

Erin Clements

Erin Clements, P.E.

EAC/MRT/mb

Enclosures - Figures

NEW MEXICO STATE UNIVERSITY

FACILITIES SPACE MANAGEMENT

FACILITIES AND SERVICES
NEW MEXICO STATE UNIVERSITY
LAS CRUCES, N.M. 88003 (505)646-2807

DRAWN BY	DATE
AN	1/96
UPDATED BY	DATE
RW	9/99
UPDATED BY	DATE
UPDATED BY	DATE
UPDATED BY	DATE
UPDATED BY	DATE

BUILDING NAME AND NUMBER: Horse Farm Office #54

STREET ADDRESS: 401 W. Union Ave.

FLOOR GSF	BUILDING GSF	BUILT
6,011	6,011	1935

FLOOR:	SHEET:
1 of 1	1 of 1

REMARKS

*Note: This drawing has been prepared for FACILITY AUDIT purposes and is not to architectural drawing specifications. All room dimensions and square footage data are very accurate.
Please inform this office of any changes, errors or ommissions to maintain accurate drawings and database information.

Room numbers used in this drawing reflect actual room markings where available. Unmarked rooms are assigned a number based upon surrounding room numbers. Please contact this office to coordinate all changes in room numbering.

FIGURE 1

NEW MEXICO STATE UNIVERSITY

FACILITIES SPACE MANAGEMENT
FACILITIES AND SERVICES
NEW MEXICO STATE UNIVERSITY
LAS CRUCES, N.M. 88003 (505)646-2807

DRAWN BY	DATE
AG	4/98
UPDATED BY	DATE
RW	3/99
UPDATED BY	DATE
UPDATED BY	DATE
UPDATED BY	DATE
UPDATED BY	DATE

BUILDING NAME AND NUMBER: Livestock Office #166

STREET ADDRESS: 3170 Knox St.

FLOOR GSF	BUILDING GSF	BUILT
Noted	7,713	1956

FLOOR:	SHEET:
1 of 1	1 of 1

REMARKS

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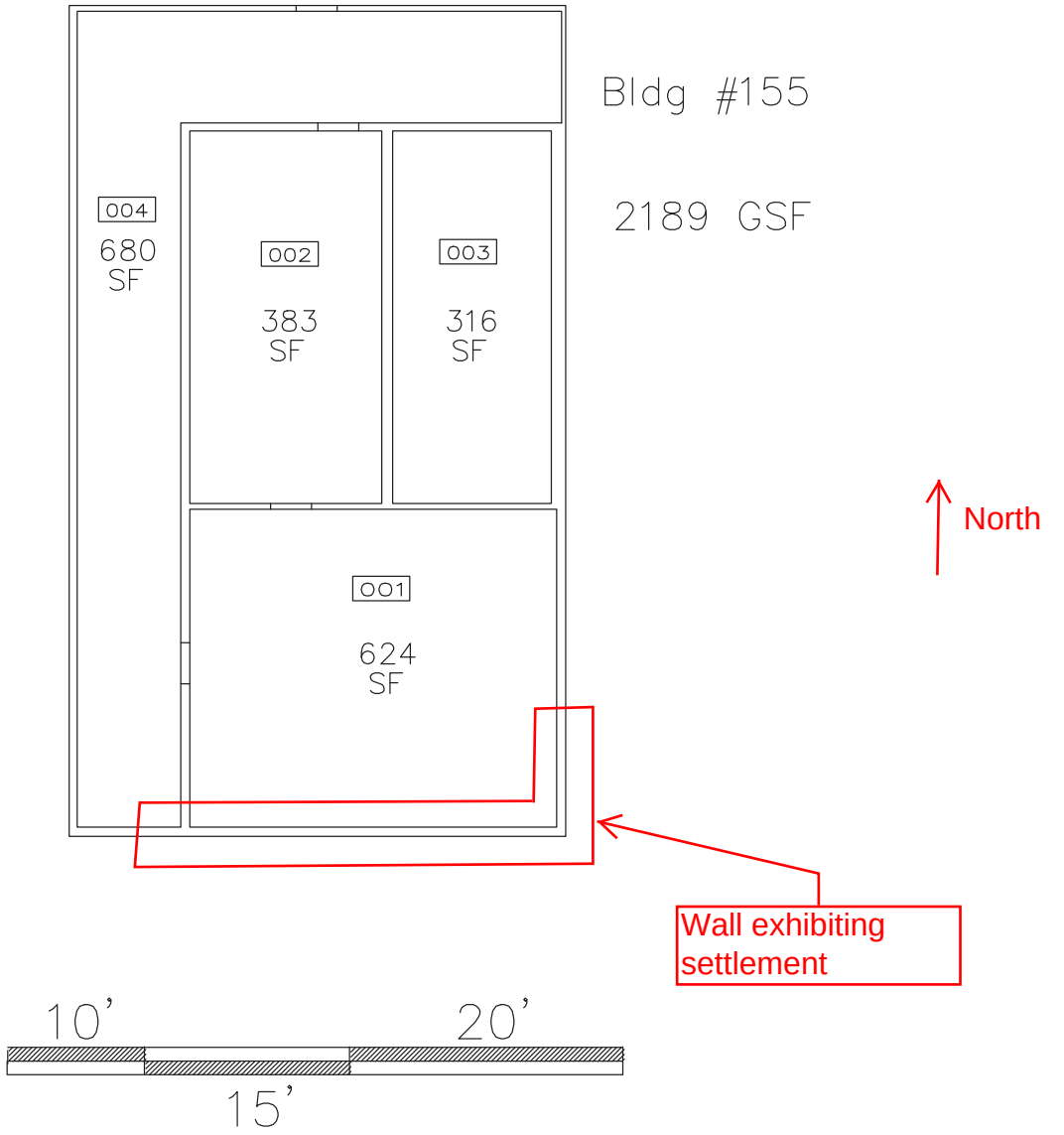
FIGURE 2



NEW MEXICO STATE UNIVERSITY	FACILITIES SPACE MANAGEMENT FACILITIES AND SERVICES NEW MEXICO STATE UNIVERSITY LAS CRUCES, N.M. 88003 (505)646-2807	
DRAWN BY: AN / DATE: 3/96	BUILDING NAME AND NUMBER: Horticulture Farm	
UPDATED BY: RW / DATE: 1/00		
UPDATED BY: RW / DATE: 9/01	STREET ADDRESS: 400 W.College Dr.	
UPDATED BY / DATE	FLOOR GSF: Noted	BUILDING GSF: Noted / BUILT: Varies
UPDATED BY / DATE		
UPDATED BY / DATE	FLOOR: 1 of 1	SHEET: 1 of 1
REMARKS: Greenhouse added on '01, +2,935 GSF		

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FIGURE 3