LAIRD + SMITHERS, INC.
Engineers and Consultants

August 22, 2016

Maria J. Pizarro, CPCM CFCM
Branch Chief, Contracting Officer
U.S. Department of Labor
200 Constitution Avenue, NW
Room N-4643
Washington DC 20210

REFERENCE: Contract No. DOL-ETA-16-C-0043, Architectural and Engineering Services for a Structural Engineering Analysis and a Report for the Main Building. Gym and Cafeteria at the Gulfport Job Corps Center located in Gulfport, Mississippi

Dear Ms. Pizarro,

Please accept this letter as our formal response to the technical comments made by the Department of Labor to our 75% report submitted on June 21, 2016. Where appropriate, our comments are incorporated into the 100% report, which accompanies this letter.

We appreciate the opportunity to provide engineering services to you and continuing our relationship. Please let us know if you have any additional comments or require additional information prior to submittal of the four hard copies, which will be signed and sealed.

Sincerely,

LAIRD + SMITHERS, INC.

H. Jefferson Laird III, P.E., LEED AP BD+C
Principal

Responses to 75% Technical Review Comments

Structural

1. The building identification should use the DOL-assigned building numbers.

   Response: DOL building labeling will be mentioned in first paragraph describing each building and in pictures. Remainder of report will continue to refer to Main Building, Cafeteria and Gymnasium.

2. The assumption of 15 psf load for partition seems high, a 2 inch x 4 inch stud wall is 2 psf and 1 inch of drywall is 5 psf totaling 7 psf per weights of building material in the 9th edition of the steel manual.

   Response: The 15 psf partition load is a uniform gravity load applied to the floor area where partition locations are not known. It is not in reference to the absolute weight of the wall construction.

   According to Section 1607.5 Partition Loads in the 2012 Edition of the International Building Code, "In office buildings and other buildings where partition locations are subject to change, provisions for partition weight shall be made, whether or not partitions are shown in the construction documents, unless the specified live load exceeds 80 psf. The partition load shall not be less than a uniformly distributed live load of 15 psf."

3. Are the dead and live loads per ANSI A58.1 - 1952 less than today's code and was there a partition load used in the original design?

   Response: The dead loads are the weight of the materials used in construction, so those will not change. The 1955 Edition of the National Building Code references ASA A58.1-1955 for the building live loads, which specifies offices to be designed for 80 psf live load and classrooms to be designed for 40 psf live load. In contrast, the 2012 Edition of the International Building Code specifies offices to be designed for 50 psf live load, which is less than the 1955 NBC, and classrooms to be designed for 40 psf live load, which is the same as the 1955 NBC.

   The 1955 Edition of the National Building Code Section 902.2 – Provision for Partitions states: "In portions of buildings used for offices or other buildings where partitions might be subject to erection or rearrangement, provision for partition weight shall be made, whether or not partitions are shown on the plans, unless the design live load exceeds 80 pounds per square foot." This language regarding partition loads is similar to IBC 2012, but it does not specify a load to be used as stated in the 2012 IBC.

4. Per Comment 3, can the requirement for upgrading/strengthening beams, bar joists and columns be reduced or eliminated if the partition load was already in the original design?

   Response: No joist, beams or columns are failing due to the addition of 15 psf for partition loads. The language on Page 15 of the 75% report stating "However, the second floor joists are not capable of supporting 15 psf partition load required by code, or the actual weight of the partitions in the pre-damaged condition, in addition to the floor live loads mentioned

above. Therefore, any locations where partitions are present, the existing joists are not sufficient to support the code-required loads, without strengthening." is incorrect and has been modified to state "The second floor joists are capable of supporting 15 psf partition load required by code in addition to the floor live loads mentioned above. Therefore, no second floor joists require strengthening due to gravity load requirements."

5. For DOL and per the FAR, proprietary specifications (design/contract drawings) are not allowed. Change specifications to say "or equal" or provide characteristic details for selected products.

   Response: All references to proprietary materials, specifically Creteplank, now includes "or approved equal" phrase.

Specifications/General

1. Executive Summary should include a conclusion paragraph, stipulating overall recommendations in general terms, and associated construction cost for renovating the three buildings.

   Response: A paragraph will be added at the end of the Executive Summary which states: "The original construction of the three buildings is typically capable of supporting the code-required gravity loads with several exceptions which are noted in the remainder of the report. However, the buildings are not constructed to resist lateral wind loads. Additionally, the condition of the beams and columns along the exterior walls of the Main Building are in poor condition, thus needing repair. Other areas throughout the buildings which are in poor condition are noted. Due to the condition of the structure and the inability to resist lateral loads, significant repairs and strengthening will be required for the buildings to resist code- required loads of the 2012 Edition of the International Building Code. The total estimated cost of these repairs is $15,324,292, as outlined later in the report."

2. Section 3.0 – First sentence, replace "there with "their".

   Response: Text is updated.

3. Section 4.0 – Suggest the following nomenclature for the report, to be consistent with the DOL building labeling:

   Response: DOL building labeling will be mentioned in first paragraph describing each building and in pictures. Remainder of report will continue to refer to Main Building, Cafeteria and Gymnasium.

4. Main Building – Building 1 (label three structures within the building as A, B and C instead of 1, 2, and 3).

   Response: First paragraph of Section 4.0 will describe Main Building as Building 1. All previous references to Buildings 1, 2 or 3 for Main Building now reference Buildings A, B or C.

5. Gymnasium – Building 2

   Response: First paragraph of Section 6.0 will describe Gymnasium as Building 2.

6. Cafeteria – Building 5

   Response: First paragraph of Section 5.0 will describe Cafeteria as Building 5.

7. Page 18 – References to "Creteplank" should be accompanied by the phrase "or approved equal."

   Response: All references to Creteplank or other proprietary material now includes "or approved equal" phrase.

8. Page 18 – Fill in cost for Main Building.

   Response: Main Building cost has been added to report.

9. Page 26 – Fill in cost for Cafeteria.

   Response: Cafeteria cost has been added to report.

10. Section 6.3 – Consider some replacement of rusted purlins in the cost, since the roof membrane was damaged (and then removed) after Hurricane Katrina.

    Response: Cost for replacement of 5% of roof purlins in Gymnasium has been included in report.

11. Page 34 – Fill in cost for Gymnasium.

    Response: Gymnasium cost has been added to report.

12. Section 7.0 – Provide text for "Conclusion."

    Response: Added Section which states: "Field measurements, materials testing, on-site observations and structural analysis has been performed to determine the ability of the existing structures to resist code-required loads stated in the 2012 Edition of the International Building Code. The structures were analyzed in a pre-damaged condition assuming the structure did not have damage prior to Hurricane Katrina. Also, the structures were evaluated in the current condition taking into account the damage caused by Hurricane Katrina, which compromised the weatherproofing of the building. The foundation was not observed or analyzed as part of this scope of work.

    Based on our findings, certain areas of the structures require strengthening due to inadequacies of the original construction to support gravity loads. All three structures require significant structural modifications to provide a load path for lateral wind loads to be transferred from the origin of the wind load on the building structure to the foundation. Also, several areas, especially in the Main Building, require strengthening to address the poor condition of the structure. The foundations will require strengthening based on the change of load path for the lateral load resistance.

The cost of the recommended repairs and strengthening are $7,162,348 for Building 1 - Main Building, $2,889,235 for Building 2 – Gymnasium and $1,762,258 for Building 5 – Cafeteria. Inclusion of demolition of non-structural items, abatement of hazardous materials and a 20% contingency yields a total estimated project cost of $15,324,292."

13. Appendix A (or add separate appendix) – provide calculations which support text of report.

    Response: Calculations have been included in Appendix I.

14. Appendix K – refer to cafeteria as Building 5 throughout.

    Response: Comment has been incorporates into Appendix K.

15. Appendix K – Page 4, item 1 – Rephrase 2°d sentence so it cannot be misconstrued as a given that the project will go forward in the rehabilitation form.

    Response: Sentence has been revised.

16. Appendix K – Page 6 – Conflict between Codes and other Legal Requirement – Delete this section, since the Section 106 process is underway, and does not need description herein.

    Response: This section does not refer to Section 106 in any respect. The section identifies additional codes and laws that affect the repairs made to the subject buildings. They are law, and will need to be observed in the final disposition of the existing buildings. Many of the recommendations for repairs shown within this study are based on these codes as well as the six that are enumerated just before this section. The cost of these repairs is based on these recommendations. Determinations evolved in the Section 106 process will not affect these recommendations.

    It is proposed that the title "*Conflict Between Codes and Other Legal Requirements*" be omitted from the report and that the three listed codes be renumbered as items 7, 8, and 9 under "*Building Codes and Historic Preservation Guidelines*"

17. Appendix K – Page 56 – fill in costs.

    Response: Costs have been deleted from Appendix K.

<u>Specifications/General</u>

1. Appendix K. Architectural Forensic Report – Page 4. Reference to the program -states that the current program is assumed to be similar to the existing program which exists prior to the building damage. The concern with the statement is that the current Job Corps Program has been revised and upgraded significantly since the original program used in the construction and renovation of the previous Center. We need to capture that the upgrades in the program is a part of the basis for the current programmatic compliance concerns and whether these buildings (Buildings 1,2 & 5) will be able accommodate the new programmatic requirements.

    Response: In order to evaluate the code conformance of the existing three buildings it is necessary to assign a classification with respect to occupancy and use of one or more

groups listed in the International Building Code. It can be assumed that any new programmatic requirements will be classified as an Educational (Group E) classification unless the concentration of people (such as a gym or auditorium) demands an Assembly (Group A) classification. These classifications can be considered temporary for planning and cost analysis until the final new programmatic requirements are evolved. At that time the Occupancy and Use classifications can be evaluated to assure compliance.

Revise this paragraph to acknowledge that significant new programmatic requirements will be evolved prior to construction, but none of the programmatic upgrades will push the Occupancy Classifications into a higher level than that required by a Group E or Group A classification.

2. Appendix K. Architectural Forensic Report – Page 36 – Please clarify the complete drying could take more than a year, so masonry walls should not be encapsulated before then. Are there additional cost implications for protecting the walls and are the escalation costs for the one year dry-out included in the cost estimates.

Response: The time required to dry a masonry wall is a combination of several factors, including the composition of materials and the ecological conditions the wall will encounter. These masonry walls are primarily brick veneer over structural clay tile for exterior walls and clay tile (or later concrete masonry units) for interior walls. An aged hand-made brick will take longer to dry than the contemporary hard-burned dense clay brick of these buildings. The mortar is a Portland cement masonry mix that is by nature hydraulic and by definition will even cure under water. All of the above lends itself to a faster than average drying time.

The structural clay tile core is more pervious than the brick and thus more subject to retaining moisture. Clay tile has open cores much like concrete block. Fortunately, clay tile is laid with the open cores horizontal rather than vertical as in concrete masonry units. This horizontal orientation discourages accumulation of free moisture withing the cores of the structural units and in fact, physical inspection of a number of cores showed no standing moisture and no indications, such as mold, that this had occurred. All walls tested wet however, and should undergo the following series of drying operations.

The first activity is to cover the walls to prevent additional rainwater accumulation. Replacing the roof will accomplish this. The second activity should be to clean the walls of moisture absorbing contaminants such as environmental dirt, mildew, flaking paint, etc. in an attempt to open the pores of the masonry to more rapid drying. Any missing or damaged joints should be repaired at this time.

The final activity should be to seal the outside masonry against further absorption of environmental water by the application of the recommended siloxane waterproofing material. This permeable coating will allow water vapor to continue escaping while excluding the larger liquid water molecules from entering the masonry pores. Before painting, the masonry should be tested for moisture content. If necessary, a paint with high vapor permeability should be used to allow continued drying if necessary. Painting

of the interior masonry should be deferred as long as possible to allow maximum drying and impermeable coatings such as epoxies should be avoided. Construction time for the building should provide adequate time for drying before the application of final coats, thus not incurring a cost penalty for careful drying.

Follow the above series of treatments and no contained moisture problems should develop. Many historic masonry buildings of great age have been successfully treated in this manner.

3. Appendix K. Architectural Forensic Report – Page 37 – Sealants – Are the sealants being recommended maintenance free or is there a requirement to reseal every three to five years? If this is not maintenance free and the bricks and mortar are exceptionally good, why seal if it is not maintenance free?

   Response: Sealants are often confused with "caulk", which has different composition and a shorter lifetime. Appropriate sealants have a warranted life of twenty years. No change required.

4. What is the remaining life expectancy of the mortar if it is currently 64 years old? Should re-painting (sic) of the mortar be considered now?

   Response: Mortar that was produced in the twentieth century such as this is much harder and more durable than the lime based mortar that preceded the current Portland cement mortars. When properly matched to the brick, adequately prepared and correctly installed, it will last an indefinite amount of time. The failure of properly installed Portland mortar is usually due to inadequate installation or to physical damage. The physical damage is usually structural (movement or cracking of the brick), freeze/thaw action, or damage caused by drilling, cutting, abrading, etc.

   The pointing of mortar joints often damages as much as it corrects. The pointing process often fails during the joint removal stage. Poorly trained, low paid workers are often assigned this job and they chip the adjacent brick or use power tools to remove the mortar and damage the adjoining masonry. It is considered best to evaluate the condition of the joints and to replace only those that need replacing while avoiding those that are performing adequately.

   Evaluate the condition of the mortar and replace only those that are cracked, missing, or failed in their bond to the adjacent masonry.

5. Since all previous work performed complied with the codes at the time of construction, would a short synopsis on the major differences on code change from the original construction code to the current adopted code be useful.

   Response: Given our task of determining the requirements to bring the buildings into compliance with the 2012 Edition of the International Building Code, a comparison of compliance with the original 1950's codes with the present building codes is not useful in our evaluation and recommendations.

Cost

1. Provide quantities and unit costs in cost estimate.

   Response: Cost estimates in Appendix J have been updated to include quantities and unit costs.