August 28, 2012

MEMORANDUM

TO: Dr. R. Bowen Loftin

SUBJECT: CBE Recommendation: Engineering Education Annex and Zachry Renovation

At its July 10, 2012 meeting, the Council for the Built Environment (CBE) discussed a request from Dean Katherine Banks of the Dwight Look College of Engineering to build an innovative Engineering Education Annex attached to the north side of the Zachry Engineering Center. The proposed structure will provide an additional 50,000 square feet, is consistent with the Campus Master Plan, and addresses design and access needs for the educational requirements of future engineers. The vertically integrated design will promote experiential learning, facilitate design experiences and encourage students to work in teams and on multi-disciplinary projects. The estimated cost of the construction and renovation is $125 million.

Design Review Sub-Council (DRsc) fully supports the need for this expansion and renovation and approves the concept as presented. DRsc recommends the design include a study of the pedestrian circulation; connectivity with the surrounding facilities and parking areas; and, the integration of inside and outside spaces. The existing facility has easy access to utilities and exhaust systems. This access and flexibility should be maintained during the programming phase in order to plan for future needs. The design study should consider the renovation’s appearance and consistency with the look of the surrounding buildings and those proposed for north of University Drive. DRsc asks attention be given to the buildings height and mass and its relationship with the ETED building as these two form a significant “gateway” to campus.

Facilities Utilization Review Sub-Council (FURsc) — recommends the proposal as presented and supports the request to proceed with the conceptual components. FURsc’s support includes the preparation of a detailed architectural drawing and launching a campaign to raise funds for the new and renovated facilities. Continued engagement of the CBE as more specific plans are developed is anticipated.

Technical Review Sub-Council (TRsc) — supports the recommendation to prepare detailed architectural drawings. TRsc supports approval of the project if the items below are addressed and funded.

Utilities and Energy Services. Any proposed utility relocation requires an in-depth engineering study of the costs to move, adjust, or add utilities on the proposed location. HVAC and Energy Systems design issues and guidelines need to be reviewed in advance of design. A list
of existing utility infrastructure impacted by the construction and renovation includes: storm water, sanitary sewer, domestic cold water and electrical distribution pipes; the planned new thermal corridor, supply and return of heating and chilled water; and, the building HVAC and Energy Systems.

Facilities Services. The project needs to address air ventilation issues including the placement and flow of fresh air louvers, exhaust fans, laboratory exhaust, and fan placement related to the building envelope.

Telecommunications. The architectural design needs to allow for "raceways" to be installed to facilitate future wiring. Zachry is a fiber hub for the Engineering complex. A 20' x 30' space is requested on the first floor to serve as the new engineering communications hub.

Facilities Coordination. Site preparation costs need to be fully understood before this project can move forward.

Transportation Services. The recommendation to eliminate garage parking in the Zachry basement is supported; however support from the Dean's office will be required to address the customers from this location. Lot 47 has ample room to offset the loss of Lot 58.

Computer Networking. The most advanced viable data network technologies will be required to support the building's mission. Data communications design consultants and audio-visual design consultants should be part of the architectural design team as early in the process as possible, preferably during the development and preliminary design stage. With respect to the Texas A&M campus network, the Zachry renovation raises significant challenges: power must be maintained continuously for the major network hub in the Zachry basement, the connection point for all surrounding Engineering buildings and backup connectivity to other major campus network hubs. Significant temporary network cabling will be required during the renovation phases to avoid long-term outages for the occupied portions of the building.

Capital Planning. System Policy 51.04 requires capital projects funded through gift funds to have 50% in hand and 25% in pledges before construction can be approved. For funds not in hand, an unrestricted source of funds must be identified to pay for the project or for the repayment of debt prior to approval for construction.

Maintenance Sub-Council (Msc) – The Msc report includes a number of concerns for the maintenance costs and a list of utility infrastructure items that need to be addressed.

In recognition of the desire that the facility be maintained to the highest standards for generations, the Msc recommends an endowment for the maintenance of the building be incorporated into the fundraising efforts. Msc supports approval of the project if the maintenance, utilities and appearance issues listed below are addressed and funded.

Maintenance. To maintain the building, access to components near the top of the atrium including lights, HVAC grilles, fire suppression sprinklers, smoke alarms, beam detectors and other similar components need to be considered. Planning and design should include moving or adapting the existing roof-mounted equipment and placement of additional equipment if needed. The concept drawings include numerous ledges which typically attract birds’ nesting and create unsightly and unhealthy waste issues.

Utilities and Energy Services (UES). The UES has identified numerous utility infrastructure complications that would have a detrimental effect on the viability of the proposed project. Utility relocation will require an in-depth engineering study, with a detailed survey to determine if a relocation of the civil utilities on the proposed site is possible, potential routes and costs. A list of existing utility infrastructure impacted by the construction and renovation includes: storm water, sanitary sewer, domestic cold water and electrical distribution pipes; the planned new thermal corridor, supply and return of heating and chilled water; and, the building HVAC and Energy Systems.
Appearance. Zachry and the proposed renovation are at a major entrance to campus. The Campus Master Plan guidelines regarding the visual continuity of building facades need to be carefully considered for the building’s face on each side. Both the appearance and unique maintenance issues inherent in the concept must be studied.

The CBE voted unanimously to recommend the President’s approval for the request by the Dwight Look College of Engineering to proceed with the conceptual components of a proposed new Engineering Annex and renovation of the Zachry Engineering Center. Along with other procedural details, this support would include at least: preparing detailed architectural drawings, launching a campaign to raise funds, and approaching legislative bodies through the University to seek funds for the new and renovated facilities.

Karan L. Watson 8-30-12
Provost and Executive Vice President for Academic Affairs
Co-Chair, Council for the Built Environment

Rodney P. McClendon 8-30-12
Vice President for Administration
Co-Chair, Council for the Built Environment

cc: Dr. M. Katherine Banks, Dean, Dwight Look College of Engineering
Sub-Council Chairs, Council on the Built Environment
MEMORANDUM

TO: Karan Watson
    Co-Chair, Council on Built Environment
    Provost and Executive Vice President for Academic Affairs

✓ Rodney P. McClendon
    Co-Chair, Council on Built Environment
    Vice President for Administration

SUBJECT: Engineering Education Annex and Zachry Renovation

Advances in engineering innovation and technology have influenced how we educate future engineers. Indeed, it is a challenge to educate a BS engineer in four years with a total of 128 credit hours and to ensure that TAMU engineers are lifelong learners and able to cope with evolving technologies. Education of future engineers requires modern classrooms and study space to impart vertically integrated design curricula and experiential learning. Furthermore, appropriate study space areas and laboratories with workshop facilities to facilitate design experiences are necessary to encourage students to work in teams on multi-disciplinary projects. Our peer institutions such as Purdue University, University of Minnesota, and Georgia Tech all have dedicated new unique buildings to educate future engineers. The University of Texas – Austin currently is in the fund-raising stage of a similar project. TAMU engineering students have no such learning environment and their current educational experience is negatively affected because of that limitation. It is imperative that Texas A&M Engineering remains competitive among our peer institutions and remains an institution of choice for prospective students, potential employers, and industry and governmental agencies seeking new ideas for workforce development of the future. To meet this challenge and to insure that our students are receiving a high quality engineering education on par with our peers, it is my goal as the incoming Vice Chancellor and Dean of Engineering to build an innovative Engineering Education Annex attached to the north side of the Zachry Engineering Center. The envisioned Engineering Education Annex will have approximately 50,000 ASF and will be integrated into a plan to completely renovate the attached Zachry Engineering Center. The proposed structure is consistent with the Campus Master Plan (p. 163). Please find attached an artist’s rendition of the proposed annex and renovated Zachry Engineering Center. We anticipate that the complete renovation of Zachry and the construction of the new annex will cost approximately $125M.
I respectfully request permission by the Council on Built Environment (CBE) and the President to: (1) prepare detailed architectural drawings; (2) launch a campaign to raise funds from friends and former students of TAMU Engineering; and, (3) to approach legislative bodies through TAMU to seek funds for the new annex and Zachry renovation. Addition of a new Engineering Education Annex and the associated renovation of Zachry Engineering Center will take TAMU Engineering to the forefront of Engineering Education nationwide. I thank you in advance for your consideration of the project.

M. Katherine Banks, Ph.D., P.E.
Vice Chancellor and Dean of Engineering
Director, Texas Engineering Experiment Station
Harold J. Haynes Dean's Chair Professor

Attachment

c: N. K. Anand
Location of Proposed Annex
Proposed Annex and Renovated Zachary Center
Engineering Education Building
MEMORANDUM

TO:        Dr. Karan Watson
           Provost and Executive Vice President for Academic Affairs
           Dr. Rodney McClendon
           Vice President for Administration

FROM:      Prof. David Woodcock
           Chair, Design Review Sub-Council

DATE:      June 21, 2012

RE:        Design Review Sub-Council Report

            Engineering Education Annex and Zachry Renovation

On June 20, 2012 the Design Review sub-council (DRsc) reviewed a request from the Dr. Katherine Banks, Vice Chancellor and Dean of Engineering, to begin the process of renovating the existing Zachry building and constructing an Engineering Education Annex addition on the north side of the facility. With this approval, Dr. Banks would seek approval through the CBE to formally initiate the project. Once approved the Look College of Engineering would assist in the development of a Program of Requirements (qualitative and quantitative) that will form the basis for concept drawings to be used in a fundraising campaign, and approach legislative bodies to seek funds for the project.

The DRsc fully supports the need for this renovation and expansion, and commends the Dean and her administration for a dynamic and forward-looking approach to providing a physical environment that responds to 21st century educational and research needs.

The DRsc notes that the proposed site location for the addition is consistent with the Campus Master Plan and is in full support of the site being used for this purpose. DRsc members fully support the philosophy to improve and expand the existing facility, emphasizing quality, long-term construction.

The DRsc recommends approval of the project with the following comments:
  - The design should study pedestrian circulation and connectivity with the surrounding facilities and parking areas, and to integrate consideration of inside and outside spaces.
  - Given the precedent in the original Zachry Building that provides easy access to utilities and exhaust systems, the design study should consider infrastructure flexibility during the programming phase in order to plan for future needs.
  - The design must recognize the urban edge of the campus that has developed along University Drive and pay attention to how the proposed architectural...
designs fit in with the surrounding buildings, including those currently being proposed across University Drive.
- While the extension of the current height and massing of the Zachry Building has merit, attention should be paid to the relationship between the new facility and ETED that will form a significant ‘gateway’ onto the campus.

The DRsc appreciates the opportunity to review this proposal and looks forward to potential future reviews of the Design Concept and subsequent steps in the design and material selection process.

cc: M. Katherine Banks
    Design Review Sub-Council Members
    Patti Urbina
MEMORANDUM

To: Dr. Karan Watson  
Chair, Council for the Built Environment  
Dr. Rodney McClendon  
Chair, Council for the Built Environment

Subject: Engineering Education Building and Zachry Engineering Center Renovation

RECOMMENDATION

The Council for the Built Environment’s (CBE) Facilities Utilization Review sub-committee (FURsc) recommends that the CBE support the request by the Dwight Look College of Engineering to proceed with the conceptual components of a proposed new Engineering Annex and renovation of the Zachry Engineering Center. Along with other procedural details, this support would include, at least: preparing detailed architectural drawings, launching a campaign to raise funds, and approaching legislative bodies through the University to seek funds for the new and renovated facilities. It is anticipated that the CBE will be re-engaged as more specific plans are developed.

SCOPE

The FURsc met this morning to consider the request by the College of Engineering to construct a new 50,000 square foot Engineering Annex and to renovate the Zachry Engineering Center. The Dean of Engineering told the sub-council members that the largest college in the University was in need of new space, which is designed to support the shifts in educational processes required to improve the quality of the student’s experience. The new/renewed facilities would be designed to support the student’s demand for the use of new technology while providing a framework for teamwork, creative thinking, experimental learning and a hands-on approach to learning. The estimated cost of such a project is approximately $125 million.

The FURsc acknowledged the Dean’s citation that the 2008 SNAPS space needs study indicated that the College was over 300,000 square feet short of space (net of the new Engineering Technology & Economic Development Building).

We are pleased to offer this recommendation and welcome further inquiries related to this analysis.

Sincerely,

James Massey
Chairman, CBE-Facilities Utilization Review sub-council
Interim Associate Vice President for Facilities

Attachments
CC: CBE-FURsc members
MEMORANDUM

TO: Dr. Karan Watson
    Provost and Executive Vice President

    Dr. Rodney McClendon
    Vice President for Administration

FROM: Tom Rebert
    Associate Vice President for Student Affairs

DATE: July 9, 2012

SUBJECT: Engineering Education Annex and Zachry Renovation

Dr. Kathrine Banks, Vice Chancellor and Dean of Engineering, presented to the CBE Technical Review Sub-council on July 2, 2012.

As incoming Vice Chancellor and Dean of Engineering, her goal is to build an innovative Engineering Education Annex to the north side of the Zachry Engineering Building. The envisioned Engineering Annex will have approximately 50,000 sq. ft. and will be integrated into a plan to completely renovate the current Zachry facility.

Education of future engineers will require modern classrooms and study space to impart vertically integrated design curricula and experiential learning. Furthermore, appropriate study space areas and laboratories with workshop facilities to facilitate design experiences are necessary to encourage students to work in teams on multi-disciplinary projects.

Recommendation
The CBE Technical Review Sub-council supports the recommendation to prepare detailed architectural drawings. We have concerns but would support approval if the items below are addressed and funded.

Utilities & Energy Services
UES has reviewed the planned expansion of Zachry Engineering and has found numerous utility infrastructure complications that would have a detrimental effect on the viability of the proposed project. Any proposed utility relocation will require an in-depth engineering study, with a detailed survey, to determine if a relocation of the civil utilities on the proposed site is even possible and, if so, to determine new routes, and cost for utility systems that would have to be relocated.
Existing Utility Infrastructure Impacted:

- Storm Water:
  - 66 inch
  - 48 inch

- Sanitary Sewer:
  - 15 inch main
  - 8 inch main with building laterals

- Domestic Cold Water:
  - 8 inch domestic cold water

- Electrical Distribution:
  - Power Man Hole 15 and 85 – Containing Electrical Feeders 6 and 15

Planned New Thermal Corridor:
Heating Hot Water (HHW) / Chilled Water (CHW) – Supply and Return

The new thermal corridor will connect to the ETED futures on the east side of Bizzell – route north to the site and west to connect to feed at Jack Brown chemistry – 12” CHW S/R – 8” HHW S/R.

Building HVAC and Energy Systems:

- If the project is approved for construction, a number of design issues and guidelines will need to be reviewed in advance of design, including HVAC design, energy efficiency standards, building automation systems, lighting, building envelope, emergency generator, utility metering and utility infrastructure interconnects.

Facilities Services
Renovating and enlarging the Zachry Engineering Center is a good idea. Zachry currently has ventilation issues relating to more air being exhausted than treated fresh air being supplied into the building. The proposed location of the addition will block existing fresh air louvers. There are several exhaust fans on the roof. Any building with laboratories needs to have the laboratory exhaust discharged above the roof with the exhaust fans outside of the building envelope. We recommend that the proposed project address these items which we believe they are planning to do.

University Police
The UPD has no issues with this proposal. It will be important for us to review once the actual architectural drawings are complete, and the issue concerning the location is determined.

Telecommunications
It was brought up that the ceiling structures will be open. We would ask that sufficient raceways be installed to facilitate future wiring. This is currently a major issue in the Architecture Buildings.
We have no communications infrastructure on the North side of the building that would need to be removed/replaced.

We are going to be adding a 4-inch conduit to the building coming in from the East side of the building as a part of the Campus Fiber Route Diversity project. This will augment fiber coming in from the tunnels.

Currently, Zachary is the fiber hub for all buildings in the Engineering complex. We have over 400 strands of fiber in the building with about an additional 200 to be added this fall. This count will go up as all buildings are converted from the older style multimode fiber that can only support gigabit networks to the newer single mode fiber that is bandwidth unlimited. The current room is in the basement (which has flooded in the past) and is too small. We would ask that about a 20’x30’ space be allocated in the new building on the first floor as the new Engineering Communications hub.

Facilities Coordination
The cost of the site preparation for the proposed annex and renovated Zachry Engineering Center needs to be fully understood before this project can move forward.

Transportation Services
Transportation Services is supportive of the Engineering Education Annex and Zachry Renovations project. The proposal calls for the elimination of parking from the basement of Zachry. We are generally supportive of this concept, however it will require support from the Dean’s office to overcome the objections from customers who currently park in that location. There is ample room across the street in lot 47 to offset the loss of lot 58.

CIS Networking
The nature of the proposed Engineering Education Annex implies that the most advanced viable data network technologies should be considered to support the building’s mission. That will mean a higher cost than the most recent data network installations. Also, the building should be designed to accommodate future changes with appropriate cabling pathways and wiring closets. This building would not be one to cut corners on the infrastructure to support the technology. Data communications design consultants and audio-visual design consultants should be part of the architectural design team as early in the process as possible, preferably during program of requirements development and the preliminary design stage.

With respect to the TAMU campus network, the Zachry renovation raises significant challenges:

1) Power would need to remain continuously available for a major network hub which exists in the basement of Zachry. It provides primary connectivity to all the surrounding Engineering buildings and
backup connectivity to other major campus network hubs and to some other specific buildings. Since at this time not all buildings are dual-attached or do not have diverse fiber pathways, an outage for the Zachry fiber hub, due to either loss of power or damage to fiber optic cabling feeding the building, would result in loss of network connectivity to a number of buildings and to loss of backup connectivity to many more. Maintaining the integrity of the main building power, the backup generator power, and to the fiber hub (the cabling pathways to the building and inside the building) would be a mandatory part of the construction process.

2) Zachry Building has an extensive internal data network. Maintaining the internal network operation to support remaining building occupants during a phased building renovation would be problematic. Unless the renovation occurs in such a way that the phases coincide with the existing physical network infrastructure topology, data network operation to various occupied portions of the building would experience long-term outages without significant temporary network cabling work being done.

3) Zachry was built prior to the creation of data networks, and no provision was made in the original construction for such items as wiring closets or cabling pathways. The data network inside Zachry has gradually grown and been modified extensively over the last 30 years. As part of the building renovation, all the existing data network infrastructure should be replaced and space provided for associated wiring closets and cabling pathways (which do not currently exist in acceptable form). The space to support the new infrastructure would most likely have to come out of space that is currently used for Engineering program purposes.

Capital Planning
System Policy 51.04 requires for any capital project funded with gift funds, the System member must have 50% of the gift funds in hand and another 25% in pledges before approval for construction on the project is received. For any funds not in hand, an unrestricted source of funds must be identified to pay for the project or for the repayment of debt prior to approval for construction.

Tom Reber
Associate Vice President for Student Affairs
Chair, CBE Technical Review Sub-council

Cc: CBE Technical Review Sub-council
Patti Urbina
MEMORANDUM

TO: Dr. Rodney McClendon  
    Vice President for Administration  
    Dr. Karan Watson  
    Executive Vice President and Provost

SUBJECT: Engineering Education Annex and Zachry Renovation

The Maintenance Sub-council members were asked to review the proposed Engineering Education Annex and Zachry Renovation and have provided the following observations and recommendations for consideration:

Maintenance Issues

The Maintenance sub-council recommends that the ongoing maintenance cost for this facility expansion be determined prior to construction and that a maintenance endowment be created as part of the fund raising efforts for this facility’s short term and long term needs. An endowment would ensure that the facility will be maintained to the highest standards for generations and not be dependent on state funding.

The open atrium design creates additional maintenance issues related to accessing components that are near the top of the atrium. Discussions need to occur during the design phase to ensure that there is reasonable access to maintain building elements including lights, HVAC grilles, fire suppression sprinklers, smoke alarms, beam detectors and other similar components.

There are concerns about maintaining the roof based on the provided concept of what appears to be an unusually complex roof with glass and structural (or decorative) elements. It is assumed that typical lab equipment will be needed in the expansion area which will require roof-mounted equipment. Given the current design scheme, it is unclear how roof-mounted equipment can be utilized. The expansion also appears to cover a significant portion of the existing Zachry Engineering Center roof which has a considerable amount of equipment on it. Planning and design should include moving or adapting the equipment already in place.

The numerous ledges visible in the concept drawings create an enormous maintenance burden due to birds that will nest in these locations and generate unsightly and unhealthy waste issues. This is an additional maintenance issue which will need to be resolved during the design phase.

Utilities Issues

Utilities and Energy Services raised particular concerns about “numerous utility infrastructure complications that would have a detrimental effect on the viability of the proposed project.” A one-page summary of these concerns with specific details has been attached.

600 Agronomy Road  
1371 TAMU  
College Station, TX 77843-1371  

Tel. 979.845.5317 Fax. 979.862.1661
Appearance Issues

Although the Maintenance-sub-council is not charged with addressing aesthetics on campus, there were a number of questions about the overall appearance of the new addition. These concerns are magnified due to its prominent location at one of the main entrances to the campus. There are questions if this proposed design meets the recommendations in the Campus Master Plan. As noted in the May 11th memorandum, the proposed footprint of the expansion meets the guidelines of the Campus Master Plan (page 163), but the proposed façade may not. On page 165 of the Campus Master Plan, under Architectural Principle 3: Facades it states “Building facades are to...provide visual continuity with neighboring buildings...”. Although there are expressed vertical elements on the proposed north face of the building which are consistent with adjacent facilities, the east face of the building does not appear to be consistent with any neighboring buildings. Careful consideration must be given to the appearance on this side of the building due to the significant number of people that will view it and the unique maintenance issues inherent in the concept.

Please let us know if you require additional information.

Rodney E. Weis
Chair, Maintenance Sub-council

cc: Sub-council members
ZACHRY EXPANSION – Utility Infrastructure and Energy Services

UES has reviewed the planned expansion of Zachry Engineering and has found numerous utility infrastructure complications that would have a detrimental effect on the viability of the proposed project. Any proposed utility relocation will require an in-depth engineering study, with a detailed survey, to determine if a relocation of the civil utilities on the proposed site is even possible and, if so, to determine new routes, and cost for utility systems that would have to be relocated.

Existing Utility Infrastructure Impacted:

- Storm Water:
  - 66 inch
  - 48 inch
- Sanitary Sewer:
  - 15 inch main
  - 8 inch main with building laterals
- Domestic Cold Water:
  - 8 inch domestic cold water
- Electrical Distribution:
  - Power Man Hole 15 and 85 – Containing Electrical Feeders 6 and 15

Planned New Thermal Corridor:

Heating Hot Water (HHW) / Chilled Water (CHW) – Supply and Return

The new thermal corridor will connect to the ETED futures on the east side of Bizzell – route north to the site and west to connect to feed at Jack Brown chemistry – 12" CHW S/R – 8" HHW S/R

Building HVAC and Energy Systems:

- If project is approved for construction, a number of design issues and guidelines will need to be reviewed in advance of design, including HVAC design, energy efficiency standards, building automation systems, lighting, building envelope, emergency generator, utility metering and utility infrastructure interconnects