



NDSU STEM Building
North Dakota State University
Fargo, ND

Subject: Advisory Committee Meeting Minutes - Workshop #6
Date: December 3, 2013

The following represents our understanding of issues discussed and decisions reached. Please review for accuracy and notify our office of any modifications.

NDSU STEM Building Advisory Committee Members Present:

Mike Ellingson, Mark Dahl, Phil McClean, Erik Diederich, Kristi Wold-McCormick, Dinesh Katti, Steven Winfrey, Carolyn M. Harvey, Andrew Mara, Anita Welch, Alan Kallmeyer, Kelly Bisek, Erika Offerdahl, Don Miller, Benton Duncan

NDSU STEM Building Advisory Committee Members Not Present:

Marc Wallman

Design Team Members Present:

Craig Larson – Land Elements (Landscape Architect)
Steve Shilke – KLJ (Civil Engineer)
Jeremiah Christenson – O.N.E. (Mechanical Engineer)
Mike Berger – MBN Engineering (Electrical)
Doug Wild, Stephanie Richards McDaniel, Craig Peterson, Brian Lapham, Kyle Lunke – BWBR (Design Architect)
Brian Berg, Mark Honzay – Zerr Berg Architects (Architect of Record)

1. Project Estimate & Budget

- The design team gave an update on the preliminary schematic design estimate.
- The current estimate indicates that the current project as proposed is over budget. The design team explained that they initially worked to accommodate all of the wish-list items brought forth through discussions with the Advisory Committee and NDSU Administration, but it appears that it will not be possible to include all of those items and maintain the project budget.

2. STEM Building Design

- The design team explained the underlying organizational and design concept that is being explored for the overall building.
 - The lower level will be organic, flowing, and intersected by paths. This is in response to the existing pedestrian paths on campus and similar to the way the rivers of the region flow through the landscape.
 - The upper levels will be rigid, structured, and deliberate. This is in response to the technical and orderly nature of the laboratory and classroom spaces and similar to the way that the overall transportation/section grid has been applied to the landscape.

3. Floor plan review

- The design team presented preliminary schematic design floor plans for each level for the group to review. A brief summary of the features, spaces, and highlights of each level follows below:
- First Level
 - The auditorium moved to the north side of the first level to better respond to the need to disperse the large gathering of occupants before and after the auditorium is used.
 - The corners of many of the spaces have been softened and rounded off to reinforce the organic movement of the spaces on the first level.
 - A lactation room and uni-sex restroom were added to the first level.
 - The location of the STEM Fluids lab was moved to the northwest corner of the first level.
 - Several student/study spaces are now located throughout the plan.
- Second Level
 - A uni-sex restroom was added.
 - The layout of the prep spaces has changed from the previous floor plan.
- Third Level
 - The layout of the prep spaces has changed from the previous floor plan.
- Lower Level
 - The connection between the lower level of the auditorium and the lower level of the building has been removed. The auditorium floor slope is more gradual and does not require a lower level connection. A lower level connection from the STEM building to the Memorial Union will remain.

4. Floor plan comments

- The group questioned the increased expense related to having curved walls on the first level.
 - The design team confirmed that this will add cost to the project, but since the curved walls are partition walls that are not load bearing, they add minimal cost increases to the project.
- The group questioned the increased expense related to the lower level tunnel connection.
 - The design team indicated that they have not explored the cost implications of this connection.
 - The design team indicated there was strong support to have some type of physical connection between the STEM building and the Union on one of the levels of the building.
 - The group questioned if a connection on the first level would be less expensive than the tunnel connection on the lower level. The design team indicated that there were several factors that favored not having a connection on the first level.
- The group questioned the expense of the two story space over the main hallway on the first level.
 - The design team confirmed that there is added cost in the project to accommodate this volume, however to realize savings by eliminating this volume, a floor would need to be added over this area and program space relocated from the footprint and added to this additional floor.
 - The design team indicated that this volume is fundamental to the current layout of the first and second floor and removing it would create significant changes to the organization and accepted flow of the current plan.
- The group questioned the lack of a uni-sex restroom on the third level.
 - The design team indicated that a uni-sex restroom was able to be added to the first and second level without compromising program space. If a uni-sex restroom was

added to the third level, program space would have to be eliminated to accommodate the additional uni-sex restroom.

- The group discussed the increased traffic flow and the impact it would have on the Union if the STEM building auditorium allowed egress directly to the lower level of the Union.
 - The group felt that there was some added benefit to the increased traffic by providing more exposure to the food court services on the lower level.
 - The group also felt that there was concern with increasing the congestion on the lower level of the Union at peak times during the day.
 - The design team indicated that by removing the direct connection between the STEM auditorium and the Union lower level, a large influx of traffic will be minimized at certain times during the day.

5. Overall Building Design Review

- The design team presented the exterior 3D views of the building and gave an overview of the important considerations being studied regarding the overall building design. These are:
 - Perceptually, the architectural massing forms housing the primary lab spaces on the second and third level continue through to house several classrooms and student spaces on the first level. In addition they continue through to the penthouse level to create the outside extents of the penthouse space. This creates two large recognizable forms (banks of spaces) that are continuous on all four levels and consolidate building structure, services, and infrastructure as well as creating a continuous unifying element among all of the floors.
 - There is a large expanse of glass cladding on the east façade that is flanked by large opaque sides. This is coupled with a colonnade on the lower level above the stepped platform that fronts Churchill field. This creates a classical expression on the east façade that highlights the active student spaces on the three levels as well as relating to the existing architecture of adjacent campus buildings.
 - The space south of and between the Union on the STEM building will be established as an outdoor plaza/park area. This space will be designed as an extension of the student lounge spaces on the first level of the Union. Outdoor tables, chairs, seating, landscaping, and hard-scaping will be provided in this area.

6. Overall Building Design Comments

- The group questioned if the floor to ceiling glazing was more expensive than an opaque surface at the lower portion of the walls
 - The design team discussed the relative cost of an opaque surface versus a glass surface and indicated that an opaque surface is general less expensive than a glass surface. The design team also indicated that if masonry is used as the opaque surface, it is more complicated to design, detail, and build, which may increase is cost.
- The group questioned what changes would yield the most cost savings.
 - The design team indicated that several small changes would equal reducing the building size. The building size is the largest contributor to the cost and reduction in building size would yield the largest savings to the project estimate.
- The group questioned the exterior glazing and began a discussion regarding the benefits and downfalls of the amount of exterior glazing being proposed.
 - The design team discussed the need for the daylighting. The only location that the design team was concerned that the amount of glass may lead to student distractions was the PBL lab on the first floor. This was indicated by the design team as a deliberate design decision to put that space on display.

- The group indicated that the projector location as it relates to the windows will need to be studied
- The design team indicated that there may be opportunity to hold classes during optimal conditions without needing to turn on the lights in the room.
- There was discussion regarding building occupants and migraine issues being increased by the increased natural light as well and building occupants with Seasonal Affective Disorder issues being increased by the lack of natural light. The group concluded that there is a balance that needs to be reached to please the largest amount of building occupants. The ability to effectively control the natural daylighting will assist in achieving this balance.

7. Project Budget Discussion

- The design team indicated the process of preparing the SD estimate. They explained that the estimate is a tool used to judge a project at a particular snapshot in time. The estimate being discussed does not include the changes that have been made from the last meeting to this meeting.
- The design team gave an update on the estimate and what components are included in the estimate
 - The project currently is estimated at \$32.5 million.
 - The project budget is \$28.1 million.
- The group discussed several options for cost reductions. These are included in the attached document. The design team will prepare a list of these suggested cost reduction items and share them with NDSU Administration for their input and recommendation.
- The group discussed some additional cost savings items
 - The group questioned building the lab spaces, but not outfitting the lab spaces at the present time.
 1. The design team indicated that it is nearly impossible to add the lab infrastructure later. If the project would add the infrastructure but not the equipment, there would be very little in cost savings.
 2. The design team indicated that there is more potential for adding future technology upgrades at a later date than adding future lab upgrades. This is mostly due to the relative size of adding wiring and conduit for technology versus piping and ductwork for laboratory features.
 - The group discussed approaching local donors for additional funds.
 1. Several local businesses could be approached for branding and donation opportunities.
 2. NDSU facilities indicated that this is possible, but the donations need to be approved by the legislature before being accepted.
 - a. This process has a timeline that does not align to this project.
 - b. This does not guarantee that the donations will be approved by the legislature.
 - c. The design team indicated that they are responsible to provide a project that is within the budget set forth and was concerned with increasing the budget to achieve the project.
 - A comment was made that this project being approved by the legislature in the first place is a great achievement. The group discussed the potential budget challenges not as what has to be cut, but rather what additional features will have to wait or omit, while still getting a much needed improvement to NDSU.
 - The group discussed the active learning rooms and if they are needed.

1. It was indicated that there are currently two on campus that are booked continuously.
 - o The group discussed the inclusion of the computer clusters. It was indicated that the current computer clusters are in high demand.
 - o The group discussed the size of the proposed classrooms. It was indicated that classrooms sized at 75 occupants and larger are in demand
 - o The group discussed omitting the H2 labs and having those courses planned in those labs being taught in existing spaces in Ladd/Dunbar.
 - o The group discussed omitting some H8 labs.
 1. It was discussed that this doesn't make sense to split the H8 labs into two locations at the campus due to the support spaces needed for them.
 2. It was indicated that if all of the classes planned on being taught in the H8 labs have to be split among different buildings, they would prefer not to be moved from their existing locations.
 3. The group discussed having the H8 labs stay in the STEM building and the H2 could remain in their existing buildings.
 - o The group suggested keeping as many lab spaces as possible because they are so hard to create at a later date.
 - o The group suggested reducing the H2 labs by 50% from two labs to one lab.
 - o The group suggested reducing the MT labs by one or two labs to go from ten labs to 8 or 9 labs.
 1. This suggestion did not receive universal support.
 - o The group discussed removing the spaces included to support upper level labs and classes that aren't first or second year classes and providing lab and classroom space reductions accordingly.
 - o The group indicated that omitting the 80 seat active learning classroom would be preferable to omitting the two 60 seat active learning classrooms.
 - o The group indicated that omitting a few or all of the 25 seat classrooms would be acceptable. The group indicated that the 75+ seat classrooms should be prioritized if possible.
 - o The group questioned the need for the large auditorium. The group felt that it does not align with the future teaching styles that are being implemented.
 1. The need for the large auditorium was defended as it was discussed that as NDSU continues to grow, large format lecture space will continue to be utilized.
 - o The group indicated that the 25 person computer room could be omitted.
 1. The engineering representatives indicated that they would utilize a 48 person computer room.

8. The next NDSU STEM Building Advisory Committee Workshop meeting will be held on **January 28th-January 29th**. Meeting locations and agenda will be sent out following these minutes.

Report by:
 Mark Honzay, AIA
 Zerr Berg Architects

CC: Mike Ellingson, Mark Dahl – NDSU Facilities Management
 Kristi Wold-McCormick, Benton Duncan, Carolyn M. Harvey, Andy Mara, Anita Welch, Don Miller, Phil McClean, Dinesh Katti, Erik Diederich, Alan Kallmeyer, Erika Offerdahl, Marc Walman, Kelly Bisek – NDSU STEM building advisory committee

Doug Wild, Craig Peterson, Stephanie Richards McDaniel, Brian Lapham, Kyle Lunke – BWBR
Marc Shannon, Jeff Morris – Northern Technologies
Steve Schilke – KLJ Engineering
Jason Skiple – Heyer Engineering
Jeremiah Christenson – O.N.E.
Mike Berger – MBN Engineering
Mike Allmendinger – Land Elements
Ami Baxter – Firefly Design

PROJECT ESTIMATE Summary

North Dakota State University
 STEM Building
 Project No. 13-056
 Date: 12/12/2013



Estimate Summary

TOTALS

General Construction Estimate	\$	14,276,199	
Lab Casework and Equip Estimate	\$	2,548,863	
Mechanical Construction Estimate	\$	6,884,572	
Electrical Construction Estimate	\$	3,174,000	
		Subtotal	\$ 26,883,634
		Bond .75%	\$ 201,627
		Total Const. Est.	\$ 27,085,261
A/E Fees	\$	1,750,000	
A/E Add'l Services			
Geotechnical Report	\$	26,000	
Geotechnical Consulting	\$	8,000	
Expanded CA - Mechanical	\$	29,800	
Civil Engineering	\$	31,000	
		Subtotal	\$ 28,930,061
Contingency	4% \$	1,083,410	
FF&E Allowance - Based on itemized summary	\$	900,000	
Facilities Departmental Costs			
Hazardous Material Abatement	\$	15,000	
Advertisements (Allowance)	\$	2,500	
Commissioning (Allowance)	\$	100,000	
Construction Materials Testing Allowance	0.5% \$	135,426	
Building Disposal C.I. Nelson Bldgs		Included Above	
Site Survey	\$	5,800	
Facilities Support	\$	50,000	
Infrastructure/Utilities		Included Above	
Telecommunications duct reroute	\$	250,000	
IT - Network	\$	150,000	
IT - Telephone	\$	5,000	
IT - Security Systems	\$	100,000	
IT - Classroom Technology - Based on per space summary	\$	1,250,000	
	\$	32,977,198	
Potential Cost Reductions			
1 Reduce H12 to H8 (4 hoods per lab x 6)	\$	(612,000)	
2 Omit cable duct reroute and manage in place	\$	(250,000)	
3 Omit Monument Sign	\$	(75,000)	
4 Omit basement auditorium access and stadium risers	\$	(150,000)	
5 Omit LED lighting in labs, interior corridors and mech	\$	(65,000)	
6 Omit Bales House and bus loop landscaping	\$	(40,000)	
7 Omit stormwater retention system	\$	(225,000)	
8 Omit connecting link canopy/enclosure at grade	\$	(50,000)	
9 Reduction lab equipment and millwork budget	\$	(150,000)	
10 Reduce scope of exterior site developmet	\$	(50,000)	
11 Building scope reduction (8,525 SF)	\$	(2,420,900)	
12 Remove penthouse	\$	(957,900)	
	\$	(5,045,800)	
Total Estimated Project Cost	\$	27,931,398	
Budget	\$	28,100,000	