SJR 14: State laboratories
Cost Evaluation for Construction of New Facility for
Veterinary Diagnostic Lab, Analytical Lab and Wildlife Lab
Bozeman, MT

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Introduction:

In November 2009, Legislative Services contacted A&E for cost estimates to construct a combined facility to house the Veterinary Diagnostic Lab, Analytical Lab and Wildlife Lab in Bozeman, MT. The labs are all executive branch responsibilities and provide quality control and analytical services to industry and the public. They have little association with research at MSU, but may employ a limited number of MSU students. Jim Whaley toured the three labs on November 18th and this cost estimate is based on observations from that visit.

Assumptions:

Analytical Lab:

- The lab occupies the entire McCall Hall, a 10,545 square foot, single story building originally constructed in 1952. Space is comprised of laboratories, receiving, storage, sample prep and offices. The lab analyzes milk, feed, fertilizer & pesticides; it employs 11 full time staff and 2 MSU student assistants.
- Because the building was converted from other uses, there are some inherent inefficiencies with the layouts and configuration of existing spaces.
- Program needs have been fairly stable and are not projected to grow significantly.
- A new building of equal size will accommodate all the existing programs growth for the foreseeable future. There may be some opportunity for minimal size reduction but without an in-depth programming exercise it is not prudent to make any reductions.

Veterinary Diagnostic Lab:

- The lab occupies 13,236 square feet of Marsh Veterinary Research Lab, a 28,092 square foot, single-story building originally constructed in 1961; the building was partially renovated and a 3,106 square foot necropsy addition constructed in 1996 to increase the total area to 31,198. The lab includes histology/pathology, clinical pathology, milk lab, serology, virology, bacteriology, molecular biology, office space, receiving, media preparation and storage.
- Because the building was converted from other uses and renovated over time, there are some inherent inefficiencies with the layouts and configuration of existing spaces. Some portions of the building are significantly unused (room 73).
- The lab has 21 employees and volume of work has been relatively stable but can expect to have spikes in demand and testing requirements associated with any of a variety of health pathogens such as the recent avian influenza and brucellosis.
- A new building of equal size will accommodate the existing programs including integration of FWP lab and necropsy functions provided the collection of samples in the loft at FWP remains stored where it is. An in-depth programming exercise has not been conducted to confirm individual space requirements and may require some modest increase in area.

FWP Lab:

- The lab occupies approximately half of the 7,007 square-foot Shop/Lab building constructed on 19th Avenue in 1988. Their area includes specimen lab, offices, storage, necropsy area and walk-in freezer/cooler.

- Lab and office space are adequate, but fully utilized. The necropsy area does not have adequate hoist and rails to facilitate efficient movement and storage of large carcasses, lacks bio-security and is used by regional staff and public.

- The lab employs 3 FTE, 6 -8 work study students and 3-5 seasonal employees.

Cost:

- The project will be constructed on property owned by MSU and there is no cost identified for land acquisition.

- Because of the need for separation of samples so that there is no cross contamination, I have not considered combining laboratories or reducing the number of laboratories. There may be some opportunities, but it will take a more in-depth analysis to confirm opportunities. The greater potential for improving efficiency is by starting with a clean slate to configure labs and improve sample flow.

- Samples will be received at a central location (large animals being the exception) and distributed to their respective isolation area for unpackaging, preparation and analysis.

- The project will construct a new 24,000 sf production lab building. The building will provide safe, efficient work environment for the staff; it will have finishes comparable to the renovated health lab in Helena and will provide for needed separation and processing of various samples received. The building will comply with current health and laboratory standards.

- Project costs included 3,600 sf (15%) shelled in space that could be used for additional storage or be remodeled for emerging technologies or other future laboratory needs.

- The building's assignable area will be portioned to be approximately 30% office, 15% storage and receiving and 55% sample prep/ analytical laboratories. While the cost for office space and storage is less than laboratory space, an aggregate cost is comparable to a college laboratory. The basis of cost is 2010 R.S Means cost estimating guides for a single story CMU/brick veneer college laboratory.

- No cost escalation is included to project a cost to construct beyond 2010. Construction costs are determined by market conditions which have been fairly volatile in the past but are now generally stable.

- The building will be constructed as a high-performance building with emphasis on energy efficiency, employee health and comfort, durability and sound sustainable practices to the extent that is cost-efficient.

- The project costs include reasonable site access (similar to Marsh lab), paved parking for staff and visitors, shipping & receiving, site lighting and a general landscape buffer around the building. Site work does not include extraordinary site conditions/soil conditions, security fence or site intrusion detection systems.

- The project costs include nominal utility extensions, but do not account for a site that is not readily served by city utilities or located in a more remote setting.

- The project costs include voice and data systems, door security systems on exterior doors and select interior locations, but does not include extensive interior video monitoring and control systems.
- Project costs include site survey, soil testing, professional services, construction, commissioning and validation of mechanical systems.
- Project costs includes new lab casework and hoods, but assumes that existing equipment and furnishings that has a useful life will be relocated, nominal office furnishings and relocation of existing analytical equipment, walk--in coolers/freezers, and the existing carcass incinerator. It does not include new equipment, computer systems or operating durables.
- According to R.S. Means, Montana's construction costs are about 15% less than the national average. No downward adjustment has been made to account for the regional cost as state contract requirements likely push our construction costs somewhat above Montana's average costs.
- Costs identified are best estimates based on available information. Line item costs will vary, but the intent is to provide a total cost that is a reasonable projection of the cost to construct the identified facility.
- A 10% contingency has been added to the estimated cost to account for unforeseen costs or minor increases in the project scope.

Calculations:

Description	quantity	unit	cost	total	Comments:
Single story lab building	24,000	sf	216.00	5,184,000	College Laboratory, Brick on CMU
Shelled enclosure with minimal systems	3,600	sf	90.00	324,000	Warehouse
Casework	8,580	sf	50.00	429,000	55% of net area lab
Mechanical, BSL 3 & energy efficiency upgrade	24,000	sf	18.00	432,000	Doubled means mech cost
BSl Emergency generator upsize	1	ls	45,000.00	45,000	100 Kw
Pavement, curb & gutter, sidewalks	18,000	sf	6.00	108,000	10" base
Landscaping inc irrigation system	6,000	sf	3.50	21,000	
Utilities (water, Sewer, power T-1, gas)	300	lf	100.00	30,000	300 lf to entry
Site lighting poles	6	ea	4,500.00	27,000	
Site survey	1	ls	8,000.00	8,000	
Geo tech	1	ls	15,000.00	15,000	
10% design fee in base costs plus2%	1	ls	121,800.00	121,800	
Commissioning	1	ls	51,840.00	51,840	
Moving costs	1	ls	40,000.00	40,000	
IT systems	1	ls	35,000.00	35,000	
Furnishings	30	employee	1,000.00	30,000	

% for art	0	
Subtotal	6,901,640	
10% Contingency	690,164	
Cost	7,591,804	
Rounding	7,600,000	

Total cost/squate foot	$275	
Cost per employee (43)	$176,744	
Finished area per employee (43)		558 sf

Summary:

Based on the above assumptions it will cost $7,600,000 to construct a new building to house the Bozeman area Veterinary Diagnostic Lab, Analytical Lab and Wildlife Lab. No consideration has been given to the Helena health lab, Great Falls grain lab or Missoula forensic lab.

This analysis does not consider costs to renovate existing buildings to address identified deficiencies, nor does it include any consideration of how the abandoned spaces will be used, or costs associated with modifying the existing space for future functions.

This analysis does not consider what MSU programs are located in the remainder of Marsh lab, their association with lab space currently being constructed on the third floor of the new Animal Bioscience Building, or the feasibility of renovating/expanding Marsh Lab to house the consolidated labs.

The cost estimate includes a number of elements such as moving costs, IT, and furnishings that will be incurred regardless of whether the state chooses to relocate to leased or owned space and should be accounted for in any comparison of lease vs. own.