

Capital Improvement Estimates

Using conceptual estimating techniques, BKV Group estimated the construction cost for each issue or set of issues identified in the Facility Assessments, breaking them into Urgent, Short Term, Medium Term, and Long Term recommendations. This estimate does not resolve all of the issues identified in the Assessment, especially those that would require major renovation or building additions. More information on those can be found in the Master Planning section of the report.

Urgent	recommend completion within one year
Short Term	recommend completion in one to two years
Medium Term	recommend completion in three to five years
Long Term	recommend completion in more than five years in the future

The preliminary capital improvement estimates represent BKV Group's judgment as a design professional and are intended to allow for order-of-magnitude planning of capital expenditures. Actual costs should be expected to vary from these numbers based upon the exact solution chosen to address each issue; the availability of labor, materials, or equipment; the Contractor's methods of determining bid prices; and the competitive bidding, market, or negotiating conditions. The estimates should be confirmed at the time of planned implementation.

These estimates are based on construction costs in April 2018. Construction costs increase significantly over time and are especially sensitive to changes in the economy. Reports suggest construction escalation could be as high as 8% per year, compounded, at the time of writing. This escalation should be factored into any capital planning. In addition, to account for soft costs such as design fees, permits, materials testing, and contingency, we recommend adding 25% of the indicated construction cost for those projects involving more than routine maintenance.

Item	Estimated Construction Cost* as of Apr. 2018	Recommended Time Period			
		Urgent	Short Term	Medium Term	Long Term

B. Site

Repair street in front of Station	\$ 15,000			X	
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C. Structural Frame

Seal cracks in masonry bearing walls	\$ 3,000		X		
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D. Exterior Enclosure

Tuckpoint at brick and limestone elements	\$ 4,000		X		
Repair spalled brick and limestone elements	\$ 1,000		X		
Replace apparatus door weatherstripping	\$ 600		X		
Scrape and paint rusting angle at apparatus doors	\$ 300		X		
Repaint Boiler Room door and louver	\$ 300		X		
Scrape and paint rusting frame at Office door	\$ 200		X		
Replace sealants at entire building enclosure	\$ 1,800		X		

Item	Estimated Construction Cost*	Recommended Time Period			
	as of Apr. 2018	Urgent	Short Term	Medium Term	Long Term
E. Interior Elements					
Seal cracks in non-bearing masonry walls	\$ 800		X		
Repair ceiling in Boiler Room	\$ 300		X		
Replace wall cabinets in Office	\$ 900				X
Replace work counter in Office	\$ 600				X
Replace cabinets in Apparatus Bays	\$ 600			X	
Replace shelving in Apparatus Bays	\$ 400		X		
Replace refrigerator in Apparatus Bays	\$ 700		X		
F. Vertical Transportation					
n/a					
G. Fire Protection					
Install Fire Sprinkler system (building wide)	\$ 15,000				X
H. Plumbing					
n/a					
I. HVAC					
Replace air conditioner in Office	\$ 1,000	X			
Add radiant heat system to Office	\$ 2,000		X		
J. Power Distribution					
Install low-voltage power distribution system for electrical shore lines	\$ 1,800		X		
Circuit apparatus bay receptacles with ground fault interrupt	\$ 500	X			
K. Emergency Power Distribution					
Install emergency lights	\$ 800	X			
L. Lighting					
Repair sconce by Office exterior door	\$ 200		X		
M. Systems, Safety, and Security					
Install fire alarm system	\$ 5,000			X	
N. Building Code Issues					
Install continuous exhaust system in apparatus bays	\$ 7,000	X			
Install exit signage	\$ 500	X			

Item	Estimated Construction Cost*	Recommended Time Period				
		as of Apr. 2018	Urgent	Short Term	Medium Term	Long Term
Infill hole between Apparatus Bays and Boiler Room	\$ 300		X			

O. Accessibility Code Issues

Install truncated domes at apparatus apron and front walk	\$ 900			X		
Replace door hardware with lever handles	\$ 1,200			X		
Construct ramps at Office and Lobby transitions to Apparatus Bay	\$ 2,000				X	

P. Energy Efficiency

Install insulation at exterior walls of Apparatus Bay, cover with cement board and tile for durable, washable surface	\$ 25,000					X
Insulate domestic hot water lines	\$ 300			X		
Insulate heating hot water lines	\$ 800			X		
Retrofit light fixtures with LED	\$ 2,000					X

Q. Health and Safety Issues

Install UL 325 protections at apparatus doors	\$ 2,000			X		
Replace apparatus doors to increase the amount of glass	\$ 36,000				X	
Add floor drains below each apparatus	\$ 12,000					X
Install direct tailpipe exhaust removal system for each vehicle	\$ 40,000				X	

R. Functionality Issues

Add bollards at apparatus doors	\$ 3,000			X		
Add hose bibs between apparatus doors to facilitate washing of rigs	\$ 2,000				X	
Provide 100,000 cycle springs and 3" track at apparatus doors.	\$ 9,000				X	
Add apparatus door controls at each door and remotes in each cab	\$ 2,800				X	
Add backup generator	\$ 50,000					X

TOTAL ESTIMATED CONSTRUCTION COST	\$ 253,600	\$ 10,100	\$ 25,600	\$ 112,400	\$ 105,500
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Space Programming

BKV Group assessed the Fire Department's space requirements based on national standards, interviews with the department leadership, current staffing levels, and demographic information.

Each section of the proposed work is programmed at the level of individual rooms or spaces. The areas identified for each are based on solid experience and familiarity of these types of facilities by the planning team, as well as data collected from Department staff. Consolidating this information, BKV Group developed a draft space needs matrix and reviewed, developed and refined the information with the project team.

The programming effort considers the current space allocation for each function, the number of firefighters allowed by ordinance, number of workstations and offices necessary, and current support spaces provided and projects these needs forward into the future. Once the program information is reviewed and confirmed with the team, this then forms the basis of the Master Planning Concepts and should be the basis of further exploration in Concept and Schematic Design phases.

Assumptions made in developing the program:

The development of the program is based on planning for a 20-year projected need. Although government buildings are commonly built to the quality of a 50-100-year life span, it is not financially feasible, nor reliable to construct spaces that may or may not be needed within that extended time frame. Rather, the building should be designed to easily accommodate renovation and expansion. A forecast of 15-20 years is the practical limit of reasonably accurate projections. It is important to note however, that as time passes, particularly if funding for a project is not immediately available, the original program should be updated upon project commencement to incorporate changing growth patterns.

How to read the Space Program Spreadsheets:

Each space required for the department is listed in the matrix along with the area required for those spaces. The number of such spaces expected to be needed is shown, then the net area is calculated by multiplying the size of the room by the number of such rooms. These are tallied at the bottom of the page into a Total Net Square Footage. This Net Square Footage does not factor in the area occupied by wall thicknesses, columns, plumbing and mechanical shafts, corridors, etc. that cannot be precisely identified at this early phase of the project. To account for these other functions, architects use a "Circulation Factor" (typically 15% to 20%) and an "Envelope Factor" (typically 12% - 15%) that is added to the Net Square Footage to arrive at a Total Proposed Square Footage. Generally speaking, buildings that require greater circulation, wide public waiting areas or large public interface functions require larger efficiency factors.

Space Program Matrix

	GOOD			BEST			
	count	unit area (sf)	net total (sf)	count	unit area (sf)	net total (sf)	comments
Office Areas							
Vestibule	2	40	80	2	40	80	may be required by code
Public Restroom				2	60	120	single user restroom
Police Interview Room	1	120	120	1	120	120	
Training/ Meeting Room				1	900	900	seats 32 at tables
Training/ Meeting Storage				1	100	100	
Coat Closet	1	12	12	1	12	12	
Station Office	1	160	160	1	160	160	shared by chiefs
Clean Storage Room	1	100	100	1	100	140	
Quartermaster Storage	1	100	100	1	100	100	
subtotal			572			1,732	
Living Areas							
Shared Locker Room	1	192	192	1	240	240	30 lockers
Single User Shower Room	2	80	160	2	80	160	
Utility Room	1	120	120	1	120	120	mop sink, laundry, ice maker, cleaning supplies, etc.
Bunk Room	1	140	140	1	140	140	two extra-long twin beds, serves police department also
Dayroom	1	280	280				required if no meeting room
Kitchenette	1	100	100	1	140	140	
subtotal			992			800	
Apparatus Bays							
Apparatus Bays	4	1,440	5,760	4	1,530	6,120	5 large apparatus; 4 small
subtotal			5,760			6,120	
Apparatus Bay Support							
Equipment Decontamination	1	140	140	1	140	140	
Personnel Decontamination	1	80	80	1	80	80	
Turnout Gear Storage	1	360	360	1	360	360	30 lockers
SCBA Compressor	1	60	60	1	60	60	
SCBA Fill Station	1	60	60	1	60	60	
Maintenance Shop	1	120	120	1	120	120	
General Storage	1	240	240	1	400	400	
Hose Drying	1	240	240	1	240	240	
Hose Storage	1	100	100	1	100	100	
subtotal			1,400			1,560	

	GOOD			BEST			
	count	unit area (sf)	net total (sf)	count	unit area (sf)	net total (sf)	comments
Building Support							
Mechanical	1	120	120	1	120	120	
Electrical	1	80	80	1	80	80	
Communications	1	40	40	1	40	40	
Water	1	40	40	1	40	40	
subtotal			280			280	
Exterior Areas							
Public Parking	3			3			might be street parking
Firefighter Parking	30			30			
Generator Enclosure							
Total Net Square Footage			9,004			10,492	
Circulation Factor (sf)			10%	900	10%	1,049	
Envelope Factor (sf)			12%	1,080	12%	1,259	
TOTAL PROPOSED SQUARE FOOTAGE			10,984			12,800	

Comparisons to Similar Communities

BKV Group contacted several communities in the southwest Minnesota region to provide a point of comparison to the square footages proposed in the Program.

Community	Area	Population Served	Year Built/ Renovated	No. of Apparatus	Includes Training Room	Notes
Adrian	8,150 sf	1,209	1976/ 2002	7	Yes	Some bays EMS or police
Edgerton	8,500 sf	1,189	2013	8	Yes	Some bays EMS
Lake Wilson	9,600 sf	251	2005	8	unknown	
Lakefield	7,800 sf	1,694	1997/1999	7	Yes	Some bays EMS
Windom	18,500 sf	4,519	2016	14	Yes	Some bays EMS
Worthington	17,870 sf	12,764	2012	12	Yes	
Proposed "Good" Fulda Station	10,984 sf	1,318	-	8	No	
Proposed "Best" Fulda Station	12,800 sf	1,318	-	8	Yes	

Typically, the population protected by a fire department does not correlate well with the area of the fire station because different types and counts of apparatus are necessary for to protect different community assets. Instead, we compare the number of fire apparatus the station can accommodate to the area of the station. Based on this metric – total fire station area per

apparatus – we see fire stations growing in size, especially over the past ten years. This is due to the continual increase in the height and length of “off-the-shelf” fire apparatus as well as the realization that the cancer epidemic among firefighters can be addressed through decontamination of equipment and personnel. As part of the cancer prevention movement, departments have realized that any items stored along the walls of the apparatus bays are exposed to carcinogens. This has led to larger apparatus bays, better locker/shower facilities, and separate rooms for storing different types of items.

The proposed fire station (including the training room) is 12,800 square feet and accommodates 8 apparatus. This is in line with expectations drawn from these comparisons with nearby communities.

Adrian Fire/EMS/Police



Edgerton Fire/EMS



Lake Wilson Fire Station



Lakefield Fire and Ambulance



Windom Emergency Services



Worthington Fire Department



Master Planning Concepts

Based upon the space needs identified during programming, BKV Group examined, at a high level, five master planning options.



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