Outlook
McDONOUGH BOLYARD PECK
Achieving Quality Through Teamwork

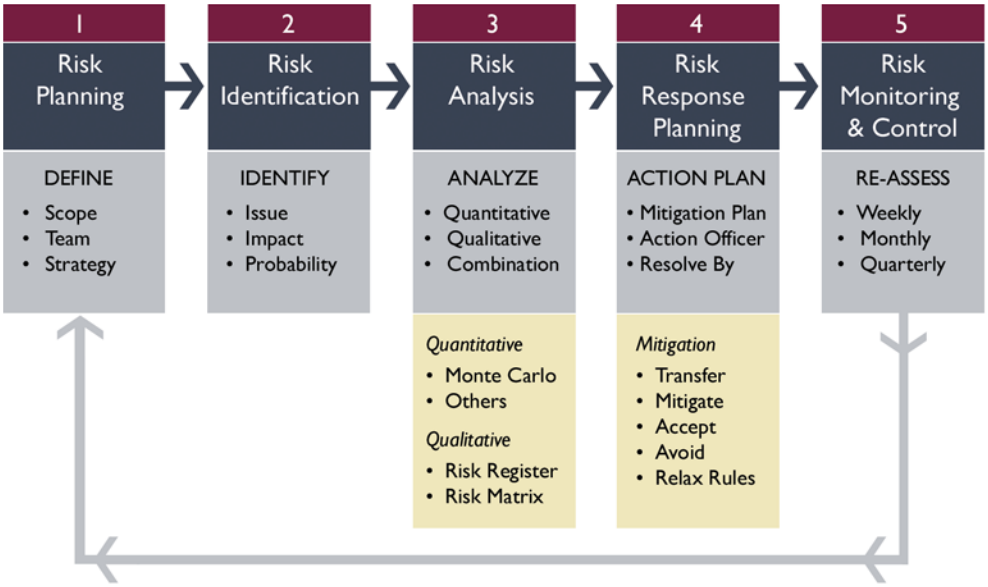
Risk Management

Project risk is an uncertain event or condition that, if it occurs, has a positive or a negative effect on a project objective. [Project] risk management is the systematic process of identifying, analyzing, and responding to project risk. It includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of adverse effects to project objective. [PMBOK Guide, 2000 Edition].

Elements of Risk Management

While several variations to the Risk Management model exist in the industry, there are essentially five steps in implementing a risk management program for capital construction projects.

1. **Risk Planning** - The first step in risk management is to define the scope as it relates to the overall objective of the risk management program. Is it going to be a quantitative risk analysis with the intent of coming up with contingency for the potential schedule and cost impacts by using such simulation software as Monte Carlo? Or is the scope of the program to formally put a risk management plan in place to address issues on an on-going basis throughout the life of the construction project? The scope definition in turn determines the type and level of expertise sought in the members needed to form the risk management team.
2. **Risk Identification** - The second step is to identify all the potential risk areas in the project. There are several ways of achieving this objective which include interviewing project personnel, reviewing project documents such as cost, schedule and issues and visiting the project site. Each risk item identified is then assigned a unique identification and assessed as to the likelihood of its occurrence and the severity of potential impacts and consequences.
3. **Risk Analysis** - This is where the scope definition plays an important role. After identifying all the potential risk items, the scope of risk analysis for a particular project may be limited to running a Monte Carlo simulation to assess the overall cost and schedule impact. The qualitative approach will be to generate a risk register and address the issue on an on-going basis (weekly, monthly or quarterly) until all the risk items identified have been resolved.
4. **Risk Response Planning** - Once all the potential risk items have been identified and their impacts assessed, the risk response options might be to 1) transfer the risk item by delegating to some other party, 2) mitigate it by creative problem solving at a lesser cost, 3) accept it by incorporating it in the project scope, 4) avoid it by severing the ties to the project and, 5) relax the rules by extending deadlines. Of course, there could be a whole host of other risk responses depending on the project and its risk types.
5. **Risk Monitoring & Control** - A comprehensive risk management program will monitor the risk items in an on-going basis by addressing them on a weekly, monthly or quarterly basis. In the process, the risk items will be re-assessed for their likelihood of occurrence and impact. New risk items will be identified, and existing ones may be retired once a resolution is reached. Continued on page 2...



MBP's In-house Risk Management Database

Over the last year and half, MBP has been serving as a risk management consultant for a very large project in the metro Washington area. In the risk identification and assessment phase, MBP had used popular risk management software called RiskTrak, by MITRE Corporation. RiskTrak is an excellent database application in terms of identifying risk items, developing mitigation strategies and maintaining a master risk register. However, our experience has shown that a dynamic risk management database with the capability to address risk parameters in terms of a matrix (a function of time, probability and impact) is needed to best achieve the full benefit of risk management.

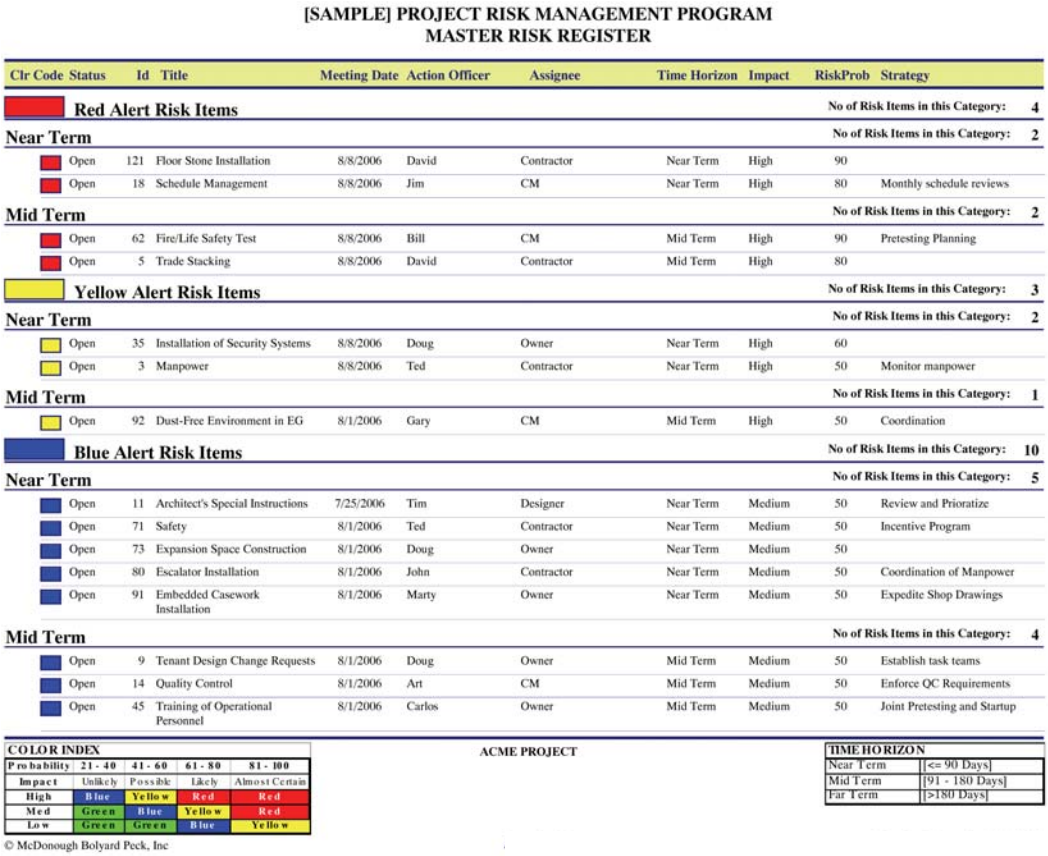
Thus, MBP developed an in-house proprietary risk management database from the ground up to address the need. The following is the underlying matrix of MBP's project risk register that categorizes a risk item in terms of severity.

RISK MATRIX COLOR INDEX				
Probability	21 - 40	41 - 60	61 - 80	81 - 100
Impact	Unlikely	Possible	Likely	Almost Certain
High	Blue	Yellow	Red	Red
Med	Green	Blue	Yellow	Red
Low	Green	Green	Blue	Yellow
Resolved	Black	Black	Black	Black

For instance, if the probability of occurrence for a particular risk item is over 90% and its impact is medium to high, the risk item is considered "hot" and is visually presented as Red. Further, if the time horizon for the risk item is near to mid term, it needs to be addressed immediately, thus moving towards the top of the list in the master risk register.

The following is a snapshot of the Project Master Risk Register. The risk register has been edited for its content for this article for obvious reasons. The primary objective of presenting the risk register in this article is to show how the risk items were categorized by their priority - in terms of their severity (red, yellow, blue and green) and their time horizon (near term, mid term and far term). The content details are not expected to be legible.

MBP's in-house Risk Management Database was designed from scratch and has been tested on one of the most complex construction projects to be constructed in recent US history. It is scalable and can be customized to meet any project specific needs. With the in-house database and the key personnel experienced in implementation of risk management programs, MBP is uniquely positioned to move forward assisting its clients in managing their project risks.



[SAMPLE] PROJECT RISK MANAGEMENT PROGRAM
MASTER RISK REGISTER

Clr Code	Status	Id	Title	Meeting Date	Action Officer	Assignee	Time Horizon	Impact	RiskProb	Strategy	
	Red Alert Risk Items									No of Risk Items in this Category:	4
Near Term										No of Risk Items in this Category:	2
	Open	121	Floor Stone Installation	8/8/2006	David	Contractor	Near Term	High	90		
	Open	18	Schedule Management	8/8/2006	Jim	CM	Near Term	High	80	Monthly schedule reviews	
Mid Term										No of Risk Items in this Category:	2
	Open	62	Fire/Life Safety Test	8/8/2006	Bill	CM	Mid Term	High	90	Pretesting Planning	
	Open	5	Trade Stacking	8/8/2006	David	Contractor	Mid Term	High	80		
	Yellow Alert Risk Items									No of Risk Items in this Category:	3
Near Term										No of Risk Items in this Category:	2
	Open	35	Installation of Security Systems	8/8/2006	Doug	Owner	Near Term	High	60		
	Open	3	Manpower	8/8/2006	Ted	Contractor	Near Term	High	50	Monitor manpower	
Mid Term										No of Risk Items in this Category:	1
	Open	92	Dust-Free Environment in EG	8/1/2006	Gary	CM	Mid Term	High	50	Coordination	
	Blue Alert Risk Items									No of Risk Items in this Category:	10
Near Term										No of Risk Items in this Category:	5
	Open	11	Architect's Special Instructions	7/25/2006	Tim	Designer	Near Term	Medium	50	Review and Prioratize	
	Open	71	Safety	8/1/2006	Ted	Contractor	Near Term	Medium	50	Incentive Program	
	Open	73	Expansion Space Construction	8/1/2006	Doug	Owner	Near Term	Medium	50		
	Open	80	Escalator Installation	8/1/2006	John	Contractor	Near Term	Medium	50	Coordination of Manpower	
	Open	91	Embedded Casework Installation	8/1/2006	Marty	Owner	Near Term	Medium	50	Expedite Shop Drawings	
Mid Term										No of Risk Items in this Category:	4
	Open	9	Tenant Design Change Requests	8/1/2006	Doug	Owner	Mid Term	Medium	50	Establish task teams	
	Open	14	Quality Control	8/1/2006	Art	CM	Mid Term	Medium	50	Enforce QC Requirements	
	Open	45	Training of Operational Personnel	8/1/2006	Carlos	Owner	Mid Term	Medium	50	Joint Pretesting and Startup	

COLOR INDEX

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Med	Green	Blue	Yellow	Red
Low	Green	Green	Blue	Yellow

ACME PROJECT

TIME HORIZON

Near Term	[<= 90 Days]
Mid Term	[91 - 180 Days]
Far Term	[>180 Days]

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About the Author - *Sagar B. Khadka, PSP*, is a Senior Engineer for MBP in its Fairfax office and has over 15 years of experience in the construction industry. He was the lead person in designing MBP's In-House Risk Management Database featured in this article. He keeps himself abreast of the latest developments in risk management by attending and participating in various seminars and training sessions. He will be one of the three panel members presenting a paper on Risk Management at CMAA's National Conference in Tampa, Florida in October 2006.

IN THE NEWS

Don Young, PE has joined the MBP Williamsburg team as Regional Operations Manager. Don has over 26 years of demonstrated leadership, teamwork, and management experience with small to large scale organizations. He has a MS in Construction Management from Georgia Institute of Technology and a BE in Civil Engineering from Vanderbilt University. He enjoyed many years of military service rising to the rank of Colonel in the US Army Corps of Engineers.

Joe Angell, PE joined the MBP Raleigh team as a Senior Project Manager. He has over 23 years of leadership experience in infrastructure and facilities management from budgeting and resourcing, through planning, design and construction, to operation, maintenance and demolition. Mr. Angell served 20 years in the US Navy rising to the rank of Commander in the Civil Engineer Corps. He is Acquisition Professional Community Level III Certified and a former Seabee Combat Warfare officer.

Elizabeth McDaniel has joined the MBP team as our new Business Development Manager for the Fairfax Branch. Elizabeth has more than 20 years of sales and marketing experience. Her past experience includes working as an independent marketing consultant and as a business development manager for a construction firm and an engineering firm. Elizabeth holds a BA in Political Science/Journalism and a MS in Health Services Administration.

Focus On Municipalities

As the need for public support services and infrastructure mushrooms with population growth further and further "outside the beltway" and in the "exurbs," counties and municipalities that previously had very little to do with construction are now finding themselves as the "managers" of burgeoning construction programs. Growth in outlying communities and revitalization and renewal of some older areas are causing local governments to invest new-found efforts in schools, fire stations, libraries, court and jail facilities, parks and multi-million dollar bond funding or other financing arrangements.

Many local governments that have been accustomed to managing construction with two, three, or five-person in-house facilities staff, simply cannot handle the workload - nor the complexity, rising costs, and integrated planning required for construction.

MBP's comprehensive program and construction management expertise enables us to help local jurisdictions meet the demands of growth and modernization. We perform as an augmentation of the municipality's own staff, working as a team with the owner, architects, engineers and contractors; and interface with and satisfy the needs of the public, facility users and maintenance personnel. These construction programs are unique because of the scrutiny, hands-on involvement and "approval" of the directly affected tax-paying public; the accountability of local officials and Boards of Supervisors; budget and financing constraints; and the range of outcomes expected from stakeholders in the community. For projects such as transit centers, libraries, and recreation centers, the user - the entity that most defines the program for the facility - is in great part, the public at-large.

As a result, in addition to managing the construction and working with contractors and designers, we have found that a large part of our role is in educating the public, the owner and the local officials: What is construction management and why is it needed? What financing and construction delivery methods are available and which are most appropriate for the project? What is value engineering, constructibility review, and commissioning? What are green buildings, what is LEED, and why should localities care? Why do "changes" and "time" cost so much, especially when they are dealt with later in the process?

The implementation of these construction programs should be investigated, planned, and managed with the same intensity, though on a smaller scale, one would take with building their own home. Of course, not everyone is an architect, engineer, or builder. Capital projects and facilities staff have a large responsibility. The rewards, however, can be unmatched in construction. What better way to contribute than in doing this as part of your job: working with the public, working as a team, planning and building facilities and infrastructure that improve the quality of life around you?

MBP values the opportunities we have to be involved with local communities, municipalities, and local governments. After all, our Team Members are a part of the public-at-large living in them. MBP's Corporate Values include Teamwork, Quality, Hard-Working, Integrity, and Forward Looking. Last, but not least, of our six values is Caring about our Community. It is a large and varied undertaking, the expectations can be high, and we appreciate and understand the challenges that municipalities face in their role as stewards of the public.

This Viewpoint was co-written by
John Koplaski, PE and Elizabeth McDaniel.

PROJECT UPDATES

MBP's Columbia branch has been selected by **Carroll County Maryland** to provide on-call commissioning services for its capital projects. Some of the projects anticipated to be commissioned under this contract include the Carroll Community College Classroom Building No. 4, Board of Education Central Office Building and South Carroll Senior Center. They were also selected as one of three firms to be awarded a five year on-call contract for schedule and claims review with the **Maryland Transit Authority** (MTA). MBP is on the KCI team for this project that includes MTA's transit and railroad related structures and facilities throughout the state of Maryland.

Norfolk Airport Authority has selected **MBP's Williamsburg branch** to provide Construction Management Consulting services under a Term Contract. The firm's first task is to provide analysis on a parking garage expansion for Norfolk International Airport.

MBP was also awarded two contracts by **Norfolk State University**. Current projects include cost estimating services for the new Campus Police Headquarters and Clerk of the Works support for the Student Services Building addition and renovation.

MBP's Raleigh office has just completed a Design Development Phase Cost Estimate for the 48,500 square foot renovation of the 1911 Building on the **North Carolina State University** Campus in Raleigh, NC and a 50% Construction Document Estimate on the New Venable Hall on the campus of the **University of North Carolina at Chapel Hill**. They are also providing Construction Administration Services to the **University of North Carolina at Pembroke** on a new 35,000 square foot building which will include classrooms, seminar rooms and faculty offices.

Career Profile

Ali Abdolahi, PE, CCM

Ali Abdolahi is a Senior Engineer in MBP's Fairfax Branch. Ali joined the team in 1993 and started as an engineer performing inspections on the Stephens City project, MBP's first VDOT field management project. Ali continued as a member of the first MBP Team on the VDOT Northern Virginia Permits contract in 1996 which included working on a wide range of highway, developer, and utility projects including fiber-optic installation. While working at MBP, Ali earned his masters degree in construction management from Virginia Polytechnic Institute and State University, and became a U.S. citizen.

Ali's many project assignments include providing construction management for Arlington County Public Schools on the Williamsburg Middle School and Jamestown Elementary renovations and expansion projects, along with many other assignments including cost estimating, constructibility reviews, claims analysis, and draw requests.

Currently Ali is leading a team of inspectors providing a new service consisting of inspections for residential/commercial building projects in the Washington Metropolitan area for the purpose of verifying plan dimensions and accessibility requirements in accordance with the requirements of the Fair Housing Act and/or Americans with Disabilities Act.

Ali and his wife Mahin are proud parents of son Arian, who is 3 ½ months old. Ali's older children Mina and Amir, are both students attending the University of Virginia in Charlottesville. Mina will continue with dental school upon graduation in spring of 2007. This fall, Ali and Mina will be busy visiting different universities around the country attending Mina's interviews at various dental schools. Amir is a third-year student who is interested in attending medical school when he graduates. Ali enjoys cooking, gardening and most of all, spending time with his family.

8315 Lee Highway, Suite 400
Fairfax, VA 22031-2215
800-898-9088

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