**RISK MANAGEMENT CHECKLIST**

Risk Assessment and Risk Management is a valuable tool at any phase of a project.

The following are some of the risk factors that should be considered for each phase of a project. Not all of them will apply to any one particular project, but will remind you of what could become a risk.

**PRE-DESIGN** **PHASE**

**Project justification / value**

* Technical feasibility
* Economical feasibility / value
* Political circumstances / pressures
* Delay in various approvals
* Statutory / regulatory (local, state, federal) constraints
* Public Acceptance

**Finding / financial**

* Sources of funding
* Political climate and public support
* Potential opportunities and timeliness
* Bond market and rates
* Exchange rates
* Inflation rate
* Cash flow uncertainties
* Authorization / appropriation risk
* Underestimation of budget and duration
* Overestimation of project benefits
* Adequacy of marketplace supply (contractors, subs, labor, etc.)

**Scope**

* Management of the scope
* Clarity of owner’s objectives
* Effect of interaction with constituents on the scope (e.g. scope creep)
* Complexity and size of the project
* Sole source equipment and service providers
* Opportunity for equipment discounts (Not likely under current City payment system)
* Design and performance criteria
* Constructability
* Omissions
* Selection of preferred alternatives based on limited design information

**DESIGN PHASE**

**In-house design**

* Sufficient staff
* Staff availability
* Staff expertise and technical knowledge
* Management commitment

**Design consultants**

* Designer’s qualifications, availability, teamwork spirit
* Designers’ understanding of cost / schedule management
* Incomplete design
* Errors and omissions
* Design QA/QC
* Accountability for design
* System integration
* Coordination between section designers
* Liability insurance (e.g. for errors and omissions)
* Quality of design (proven vs. unproven design, constructability, bidability)

**Project / site**

* Design and performance criteria
* Complexity
* Subsurface conditions / hazardous materials
* Unreliable data and test results (geotechnical, hazardous materials, cultural resources, other environmental conditions.
* Inaccurate or inadequate surveys
* Design changes
* Scope changes
* Scope creep
* Impact from abutters

**Cost estimate and schedule**

* Soundness of engineer’s estimate
* Omitted quantities
* Financial costs risk / opportunities
* Escalation assumptions
* Underestimation of design effort / cost
* Completeness and reasonableness of schedule
* Schedule consistency with project scope
* Level of schedule detail / integration
* Inadequate contingency
* In adequate force account budget

**Right-of-way acquisition**

* Right-of- way appraisal and acquisition
* Delay in property acquisition / court injunction preventing property taking

**Regulatory conditions**

* Licenses, permits, approvals
* Environmental regulations and requirements
* ADA requirements
* Delay in various approvals
* Patent infringements and proprietary processes
* Buy American and other City procurement requirements

**BID AND AWARD PHASE**

**Project Delivery**

* Design, construct, operate approach chosen

**Contract**

* Fixed price
* Unit price
* Cost reimbursable (even in fixed price contracts, parts can be reimbursable)
* Dated contract documents.
* Contract package size (Too big and it may limit number and type of bidders)

**Contractor**

* Experience and performance on similar projects
* Character, capacity, capital, continuity (criteria used by surety)
* Safety record
* Need for bonds, bond limits surety’s reputation
* Familiarity with the area
* Cost, schedule and document control practices
* History regarding claims and change orders
* History of delivering on-time and on-budget
* Subcontractor qualifications and capacity
* Subcontractor roles and responsibility
* QA/QC program (contractor / subcontractors)

**Market conditions**

* Number of bidders
* Availability of supplies and subs
* Unemployment rate in construction trades
* Workload of regional contractors
* General Economic climate that can affect bidding behavior
* Material and energy prices
* Inflation rate, interest rate

**Regulatory conditions**

* Environmental and ADA requirements
* MBE/WBE requirements
* Limitations on the use of overseas materials and equipment
* Council contract conditions (Slavery Ordinance, etc.)

**Owner – PM/CM involvement**

* Clear definition of PM/CM scope and authority
* Underestimation of level of effort (soft costs)
* Supplying of material
* Testing, inspection and safety
* Start up and providing clear access to the site
* MOUs and coordination with other agencies, companies and community groups
* Communication channels / MIS

**Guarantees**

* Contractors’ bonds or letters of credit
* Consultant designer’s liability insurance
* Consequential damages
* Liquidated damages
* Performance / quality
* Cost / schedule

**CONSTRUCTION PHASE**

**Insurance**

* Coverage and requirements
* Wrap-up insurance

**Site**

* Access
* Congestion
* Differing Site Conditions including but limited to: Soil and rock conditions, contaminated soil, Water table and flow (underground work) or Hazardous waste materials (i.e. lead-based paint, asbestos, abandoned oil lines, etc.)
* Archeological finds, sites
* Endangered species and other environmental concerns
* Environmental mitigation and remediation
* Noise mitigation: supplemental structures and remediation
* Security
* New security concerns leading to shutdowns, etc.
* Abutting structures and their conditions
* Unanticipated settlements

**Work schedules**

* Abutting contractors
* Limited work hours, restrictions on some construction activities such as blasting, trucking
* Maintenance of traffic, restrictions on traffic flow and access to site
* Disruption to public and businesses
* Coordination with utilities and other agencies
* Coordination with suppliers (long-lead orders)
* Securing critical shop drawing approval in a timely manner
* Subcontractors’ delay, contractor’s failure to effectively manage subs
* Weather effects on schedule
* Cash flow and contractor payments

**Means and methods**

* New, untried techniques
* Quality of work performance
* Noise, dust, fumes, excessive vibrations
* Utility relocation
* Errors in design of temporary facilities
* Accidents
* Material shortages and large price increases
* Delays in mobilization (equipment and manpower)
* Failure of major equipment
* Hardware / software problems (control systems, integration, etc.)

**Acts of God / force majeure, including but limited to**

* Inclement weather
* Earthquake
* Flood
* Fire
* Terrorism
* Police pursuit-activity

**Labor (Most of these risks are transferred to the contractor, but can affect the schedule and cost.)**

* Strikes
* Accidents
* Large wage fluctuations
* Sabotage, theft
* Substance abuse
* Unions
* Material wastes
* Insurance
* Productivity (especially in Force Account contracts)

**POST CONSTRUCTION PHASE**

* Individual systems and full integrated testing
* Owner training
* Full commissioning
* Occupancy permit (building projects)
* Warranty issues
* Complete close-out of all financing, funding and permit agreements and conditions