

Project management

Main risks of any construction project:

- Poor quality of works
- Project out of budget
- Project out of schedule
- Incidents with loss of time, money, health, sometimes lethal cases
- Civil and criminal responsibility of company personnel
- Company reputation risks

Red flags of serious project problems

a. Project expenditures are already 15% higher than budgeted and continue to rise. You do not have details on the invoices that were paid to designers and contractors in the last two months. The project does not have a technical supervision team, or it is reporting to the same person that responsible for the schedule, creating a conflict of interests. Works are being accepted without as-built documentation.

b. Your project is already late for more than three months and is forecast to be more than six months late overall.

c. Designers blame you for not receiving quality data for the design work. Project participants do not communicate in writing or keep meeting minutes and only speak verbally. The project team prefers to keep silent about problems. Nobody offers corrections to drawings. The project has no designated chief engineer permanently on site, no chief technology engineer, no chief structural engineer. The drawings have to be constantly changed and revised.

d. No one calculates daily productivity per worker. There is no daily roster of the amount of workers and machinery on site. You do not have web cameras on site. Workers do not have A3 drawings in hand. The General Contractor does not have its own workers and machinery, it only has subcontractors.



1 Project initiation

Required initial data:

- Market research, project marketing results
- Budget size
- Required project duration
- Available land plots for buildings
- Laboratory data on raw and required materials
- Rights of ownership for use of land plot, title for real estate and facilities
- Cadastral plan of the site containing geodetic coordinates of border
- Bureau of Technical Inventory passports and plans on existing buildings and structures

What we propose:

Due diligence, determining concept design constraints through analyzing:

- Planning restrictions
- Height restrictions
- Subsurface works restrictions
- Zoning restrictions
- Urban master plan, including allowable population density
- Main constraints on external networks and infrastructure

Drafting technical specification

- Land usage proposal
- Unfinished structures usage proposal, if any
- Technical specification and RFQ for concept design
- Technical specification and RFQ for 3D modeling

Arranging tender for concept design

- Pre-qualifying participants
- Preparing tender for concept design
- Drafting and negotiating contract for concept design

Management

- Help Investor choose the main team – chief engineer, chief architect, chief technologist, designer, etc.
- Arrange weekly meetings
- Participate in negotiations with local authorities
- Assist Investor to choose design strategy
- Analyze parallel construction works
- Advise Investor on splitting the project scope into contract packages
- Approve the design flow scheme with Investor

Risk Assessment

- Risk assessment at initial project stage
- Risk mitigation plan

Results:

- Report on due diligence, with complete picture of project restrictions
- Technical specification for concept design
- Technical specification for engineering surveys
- Technical specification for structural surveys of buildings and facilities
- Concept designer selected
- Responsibilities matrix for project participants
- Organogram and participant contact list
- Creation of central storage for project documentation

2 Concept design

What we propose:

Monitor third party work on initial data

- Structural survey of buildings and structures
- Existing mechanical systems survey
- Required project duration
- Existing electrical systems survey
- 3D laser lidar scanning
- Subsurface utilities and communications map
- Environmental survey
- Topography survey
- Geology survey

Project management

- Coordinate concept designer work
- Verify calculations of external utilities capacities
- Verify internal engineering systems capacities
- Approve building layouts with Investor
- Approve building sections with Investor
- Optimize building inner space use
- Optimize general plan
- Develop process flow diagram
- Manage 3D design
- Write specification for project mock-up model
- Calculate mass balance (for production)
- Pre-select equipment and approve with Investor
- Approve main technology solutions with Investor

Project planning

- Create high-level project schedule
- Identify major project milestones
- Calculate the critical path
- Develop detailed works specification
- Develop detailed budget for the main scope of works
- Risk and mitigation planning

Results:

- Technical specification for scheme design stage scope
- Detailed works specification
- Calculations for obtaining technical conditions for external utilities
- Gantt chart, the main work schedule
- Detailed budget on conceptual stage
- Official album for town planning approvals
- Plans, sections, elevations, master plan, equipment layout plans
- 3D model with construction stages
- Process flow diagram
- Preliminary plan of external utilities connections
- Geology report
- Topography report
- Subsurface plan of existing underground situation
- Ecological survey report
- Risk and mitigation plan on concept stage
- Project mock-up model
- Concept design stage report for the Investor
- Drawings numbering system

3 Town planning approvals

What we propose:

Monitor third party work on

- Obtaining subsurface plan of existing underground situation along external utilities routes

Monitor project approvals

- Approval of concept design with local authorities (third party)
- Develop roadmap for approvals
- Approval of pre-project proposals booklet (third party)
- Passing regulatory commission (third party)
- Obtaining technical conditions to connect to external utilities (third party)

Urban design management, monitoring of third party work on

- Development of urban planning study (Gradostroitelnye Prorabotki)
- Development of urban planning change design (Gradostroitelnoe Obosnovanie)
- Development of urban planning design (Proekt Planirovki)
- Receipt of urban plan (GPZU)

Tender to choose General Designer

- Drafting and negotiating general design contract with Investor and General Designer
- Pre-qualifying Stage P designers (for scheme design)
- Assisting Investor to organize General Designer tender

Results:

- Urban planning study (Gradostroitelnye Prorabotki)
- Urban planning change design (Gradostroitelnoe Obosnovanie)
- Urban planning design (Proekt Planirovki)
- Urban plan of the site (GPZU)
- Technical conditions to connect external engineering utilities
- General Designer selected
- Detailed design schedule
- Revised organogram of the project
- Revised responsibility matrix
- Regulatory commission meeting minutes
- Roadmap of approvals
- Approvals report for Investor
- Revised project master schedule

4 Scheme design and tender documentation

What we propose:

Design management

- Arrange design meetings
- Follow-up on General Designer schedule
- Make comments and notes for design documentation
- Approve design documentation with the Investor
- Monitor design documentation approvals from state expert review panel (aka "State Expertise") (third party)
- Monitor handover design documentation to state expert review panel (third party)
- Monitor state expert review panel issuing comments and General Designer correction of drawings (third party)
- Monitor the obtaining of positive conclusion on design from state expert review panel (third party)
- Clarification of technical specification for working documentation design

General Contractor tender

- Handle tender documentation collection, analysis and comments
- Create RFQ for General Contractor tender
- Draft and approve General Contractor contract with Investor
- Pre-qualify General Contractors
- Support General Contract
- Assist in negotiations with General Contractor

Planning

- Clarify project schedule
- Clarify project budget

Communications Management

- Approve design documentation with Investor, obtaining status of "for working design"

Results:

- Scheme Design (stage P) drawings, signed/stamped by Investor "for working design"
- State expert review panel conclusion
- Design progress reports for Investor
- Design meeting minutes
- General Contractor meeting minutes
- General Contractor contract
- General Contractor construction schedule
- Technical specification for working design scope

5 Working documentation design

What we propose:

Working documentation design tender

- Pre-qualify bidders for working documentation design
- Assist Investor with working documentation design tender

Working design management

- Monitor scope and schedule of working documentation design
- Change management in working documentation
- Issue comments to correct in working documentation
- Monitor working documentation approvals by authorities (third party)

Communications management

- Approve working documentation with Investor, obtaining status of "for construction"

Planning

- Clarify project schedule
- Clarify project budget

Results:

- Approved "for construction" working documents accepted by Investor
- Design meeting minutes
- Working documentation design schedule
- Revised project master schedule
- Revised project budget



6 Construction

What we propose:

Planning

- Monitor General Contractor's schedule on a weekly basis

Communications management

- Coordinate meetings with General Contractor
- Develop the procedure "Transmitting Working documentation to General Contractor"

Construction management

- Transfer site responsibility to General Contractor through official act
- Monitor the obtaining of IGASN building permit (third party)
- Monitor the obtaining of Order for Execution of Works from OATI (General Contractor)
- Monitor General Contractor's execution of contract terms
- Safety monitoring (EHS)
- Check EHS qualifications of General Contractor staff
- Monitor author supervision by General Designer
- Change management, sorting the additional works

Technical supervision during construction

- Conduct compliance checks of works performed with working documentation
- Conduct compliance checks of works performed with quality standards and norms
- Complete control of construction journals
- Participate in inspection commissions on incoming equipment and materials
- Conduct quality checks of as-built documentation on completed works
- Conduct quality checks of the works included in KS-2, KS-3 and KS-6a acts by all contractors
- Review documents on dangerous construction equipment
- Issue correction orders to General Contractor and contractors

Financial analysis and construction control

- Develop and maintain construction financing schedule
- Monitor overall budget spending
- Monitor and forecast purchasing costs for materials, equipment and construction services
- Conduct plan-fact costs analysis during project
- Monitor and review accounting documentation
- Conduct independent accounting and cost valuation
- Review cost to complete

Risk assessment

- Project risk assessment
- Risk mitigation plan

Results:

- General Contractor meeting minutes
- Construction progress report for the Investor
- Financial and budget report for the Investor
- Financial report: "Budget, paid to date, accepted by acts, built in fact"
- Risk management report for the Investor
- Acts of acceptance
- As-built documentation
- Recommendations for acceptance or rejection of documents presented

7 Final

What we propose:

Control of systems testing and deployment

- Prepare of systems testing algorithms
- Participate in complex systems testing and commissioning
- Participate in hydraulic flushing and pressure tests of external mechanical utilities
- Participate in testing of external cables and electric systems
- Monitor handover of external communications to maintenance (third party)
- Control the signing of contracts for external utilities resources (third party)

Commissioning

- Review as-built documentation, compose punch lists
- Transfer the as-built documentation to maintenance company

Contract closeouts

- Assist Investor to close contracts with designers and contractors

Project closeout

- Preparation of actual project schedule with baseline
- Preparation of actual project budget with baseline
- General report

Results:

- Check-lists and systems verification acts
- Punch-lists
- As-built documentation transferred to maintenance company
- Manual for building transferred to maintenance company
- Maintenance company personnel educated by vendors and General Contractor
- Responsibility for building and external utilities transferred to Maintenance Company
- Post-project analytical report
- Project is ready for operation