

Construction Let Budget setting process

One of cornerstones of project management is setting, monitoring, and measuring project budget. As a first step MnDOT will establish project construction let budgets for all MnDOT let projects. In the future, project budgets could also include the other elements of TPCE, including right of way, engineering, agreements, etc. The “construction let” budget represents the cost at the construction contract award point. The construction let budget will be included in the Total Project Cost Estimate.

Level of Project

MnDOT’s program contains projects of varying degrees of complexity. A project of lower complexity is more straight forward to set a budget on than a project of great complexity. Every project will be categorized into one of the three following levels. The level will be assigned through collaboration between operations division and district leadership. As the project progresses, upon mutual agreement of project staff and leadership, the level of a project may change.

Level 1 – highest level of complexity

Considerations that operations leadership/district leadership may use in determining the level of a project include the following:

- Significant cost implications to the district’s/MnDOT’s annual program (generally in excess of 20% of districts annual construction budget)
- Heavy engagement/involvement from stakeholders and/or elected officials
- Complicated engineering, proposed alternatives that MnDOT doesn’t construct frequently
- Complicated environmental impacts and mitigation, often associated with complicated EAs or EISs., or other technical issues/solutions
- Higher level of involvement needed due to social impacts and mitigation (potential burial mounds, environmental justice, etc.)
- A project from a special funding program (corridors of commerce, 17NEW, Chap 152, etc.)
- Unusual or challenging risks
- Other Characteristics

Level 1 projects will have the highest level of MnDOT leadership involvement through Major Project Leadership Team (MPLT) and periodic check ins. Leadership, using MPLT, will be involved/approved in setting the original and any subsequent changes to scope, schedule, and budget. Types of level 1 projects include.

- Expansion projects (TH 14, TH 23, I94 Monticello to Clear Water, Metro COC projects, etc.)
- Urban reconstruction (Glenwood, Wadena, etc.)
- The biggest of preservation projects (Blatnik Bridge, Dunwoody-394 bridge, I94 east of St Paul UBOL, etc.)
- Unique projects (storm caverns, high bridge redeck, 3rd avenue bridge, stone arch bridge, etc.)

Level 2 – moderate level of complexity

Considerations that district leadership may use in determining Level 2 projects include one or more of the following:

- Moderate cost implications to the district's program (approximately 5 to 20% of district annual construction budget)
- Moderate Engagement/involvement from stakeholders and/or elected officials – some potential of controversy
- Projects that have significant Traffic Impacts
- Significant ordinary risks (unsuitable material conditions, big utility impacts, bigger RR agreements)
- Moderate environmental issues/mitigation, often found in EAs and maybe complicated CEs
- Other characteristics?

Level 2 projects will have moderate level of MnDOT leadership involvement. District engineers will be the main point of leadership on level 2 projects with periodic coordination with the division director. The method of keeping the DE informed will be up to the district to determine (the use of POC/MPC in metro might be one way). The DE will be involved in setting the original and any subsequent changes to scope, schedule, and budget. Types of level 2 projects include.

- Major preservation/rehabilitation projects (medium to long UBOL's, Reclaims, & CIR; larger single bridge replacement projects or multiple medium size bridges bundled together, etc.)
- Bit overlay with ADA projects and/or r/w takings
- Pavement preservation projects with detours or other significant traffic impacts

Level 3 – lowest level of complexity

Considerations that district management may use in determining the level 3 projects include one or more of the following:

- Tend to be lower cost projects (under 5% of district annual construction budget)
- Not likely to have any controversy with stakeholders or elected officials
- Environmental concerns and mitigation are most often addressed in a CE of ordinary to low level of complexity
- Ordinary risks (inflation, uncertainty of bid prices, uncertainty around quantities, etc.)
- Other characteristics?

Level 3 projects will have district level of MnDOT leadership involvement. The ADE/area manager will often be the main point of leadership on level 3 projects with periodic coordination with the DE. The method of keep the ADE/area manager informed will be up to the district to determine. The ADE/area manager will be involved in setting the original and any subsequent changes to scope, schedule, and budget. Types of level 3 projects include:

- Small bridge projects
- Thin to medium mill and overlay projects without ADA or r/w
- Signal/roundabout projects
- Lighting projects
- Guardrail projects

Construction let budget setting and review process

The construction let budget will be set through the development of a risk-based cost estimate inflated to the mid-point of construction. The establishment of a Construction Let Budget is a multi-step process, as follows:

- 1) Develop an approved scoping report for the project, which outlines the needs for the proposed project.
- 2) Develop a project cost estimate
- 3) Perform and document project risks in a risk register with order of magnitude and probability of occurrence for level 1 and 2 projects. Level 3 projects can have their own register or use a programmatic risk register.
- 4) Integrate the project risk profile into the project estimate to establish the probable risk-based cost estimate.

- 5) Inflate value to the mid-point of construction. This can be to the date of letting with approval from MPLT. This value should be rounded to the nearest \$1,000.
- 6) Establish and monitor budget as shown below. Note the budget number should match the funding number and be used in the development of the STIP on an annual basis.

Establish Budget Prior to Entering the STIP

- The District will establish an initial construction let budget at the completion of the initial scoping of the project prior to entering the STIP.
 - See processes below on how to set the budget for Level 1, 2 and 3 projects.
 - Based upon the project estimate, associated project risk, and inflation.
 - Value will be the value used to program the project in the STIP (budget = STIP funding).
 - Enter into CHIMES the original established budget estimated value for Preliminary Engineering, Construction Engineering, and Change Orders (based upon a percentage of the established budget) should be entered into CHIMES. The funding screen in CHIMES will be developed by the CHIMES coordinator to match the established project budget (never exceed.) (2)

Budget Check-in: 2-Years Prior to Letting or end of NEPA

- The Construction Let Budget will be verified and documented in CHIMES 2 years prior to letting or at the completion of the NEPA process, whichever comes first. If the project budget requires modification, the project manager use the same process that was used to establish the project's Construction Let Budget to make modifications.

Document in CHIMES:

- Reason for the increase/decrease in the budget. Inflation should match the percentages recommended by MnDOT's Economist.
- Describe where the funds are coming from and how much (e.g. which set-aside in the STIP, which project will be deferred, grants).
- If increasing the scope and deferring other projects, document which trade-off analysis was done to make this decision.

Budget Check-in: Project Milestones

The project budget, cost estimate, risk register (1), and inflation should be reviewed at least yearly, at major milestones (30/60/90%, turn-in), or when there are significant changes to the scope.

If the project budget requires modification, the project manager use the same process that was used to establish the project's Construction Let Budget to make modifications. Document in CHIMES:

- Reason for the increase/decrease in the budget. Inflation should match the percentages recommended by MnDOT's Economist.
- Describe where the funds are coming from and how much (e.g. which set-aside in the STIP, which project will be deferred, grants).
- If increasing the scope and deferring other projects, document which trade-off analysis was done to make this decision.

Notes

- Do not update the budget after letting.
- The District may choose to use Monte Carlo Analysis to determine the P70 value and thus the budget for Level 2 and Level 3 project, but this is not a requirement.

Level 1 project budget setting process

- Major Project Leadership Team (MPLT) will establish the construction let budget based on the recommendation from the District.
- PM, or under their direct supervision, will:
 - Prepare a construction cost estimate that has lines for the base scope, uncertainty due to bid price and quantity uncertainty (based on a Monte Carlo analysis), and risks (based on a Monte Carlo analysis).
 - Incorporate inflation through the following:
 - \$40 million and greater projects: Inflate the estimate to year of letting. District may request an exemption to MPLT to use the mid-point.
 - Less than \$40M – Inflate the estimate to mid-point of construction.

- Develop a recommended budget that incorporates the base project, risk and inflation using Monte Carlo using a p70 confidence level.
- Present their recommended budget to MPLT and obtain their approval.
 - At MPLT, also provide a estimated total project cost that includes design/delivery costs, construction inspection and administration costs, right of way costs, agreement costs, environmental mitigation, and other elements of total project cost estimate.
- Scope of Budget Changes:
 - Minor changes from the original budget (generally accepted as 5% of previously approved project costs or \$750,000, whichever is less) need to be approved by District Engineer and updates/noted in CHIMES.
 - All other requests to scope or budget need to go to MPLT for approval. PM will need to give changes forethought and allow for time to gather approvals. Timeframe for approval may take days or all the way up to months. There are no hard and fast deadlines but the more the MPLT members know of your risks and project, the faster that changes will be approved.

Level 2 project budget setting process

- The District Engineer will establish the construction let budget based on the recommendation from the district Project Manager.
- PM, or under their direct supervision, will:
 - Prepare an estimate that should include a quantitative risk assessment process. This process includes the completion of a risk register. Each risk should be given a likely cost and probability of occurring. The extent of the risk register will vary for each project, depending on the volume of risks. If the sum of expected value (cost of risk multiplied by probability) of the identified risks exceeds 40% of the base construction budget a Monte Carlo analysis should be completed. Otherwise, the expected value of the risks should be considered the risk component of the cost estimate.
 - Prepare a construction cost estimate that has lines for the base scope, uncertainty due to bid price and quantity uncertainty (based on a Monte Carlo analysis), and risks (based on a Monte Carlo analysis).
 - Inflated the construction cost to mid-point of construction or year of letting.
 - Prepare a total project cost estimate that includes construction, design/delivery costs, construction inspection and administration costs, right of way costs, agreement costs, environmental mitigation and other elements of total project cost estimate.

- Make a construction let budget recommendation based on the information above. The District Engineer will review the information, consider all the district's needs, and the recommendation and ultimately set the projects construction budget.
- Any requests for changes in scope, schedule, or construction let budget will need to go to the District Engineer to get an amendment to the budget. Moderate to significant changes in scope, schedule or construction let budget will need to have coordination with the Division leadership too.

Level 3 project budget setting process

- The District Engineer or Assistant District Engineer will establish the construction let budget based on the recommendation from the district Project Manager.
- PM, or under their direct supervision, will:
 - Prepare an estimate with lines for construction costs and program risk factor applied.
 - Inflate the construction costs to mid-point of construction or year of letting, if approved.
 - Make a budget recommendation based on the information above. The ADE will review the information and the recommendation and ultimately set the budget.
 - Prepare a total project cost estimate that includes construction, design/delivery costs, construction inspection and administration costs, right of way costs, agreement costs, environmental mitigation and other elements of total project cost estimate.
- Any requests for changes in scope, schedule, or construction let budget will need to go to the ADE to get an amendment to the budget. Moderate to significant changes in scope, schedule or budget will need to have coordination with the DE too.

Additional Construction Let Budget Guidelines

All projects regardless of level, should need to consider and/or complete the following items:

- The initial construction let budget will be recorded into CHIMES by the District.
- The approved budget should be the construction cost shown in the STIP.
- All approved changes to the construction let budget will be recorded in CHIMES, including adding information in the notes field to document why.
- Every time the cost estimate changes does not automatically create the need for an amended budget. The construction let budget should be a target. Small deviations in project cost should be brought back to the budget amount through the project management and enlisting district management as needed.

Performance Measures

- Primary
 - Budget 2 years prior to letting or before NEPA vs Let Amount
 - Level 3 Projects – 75% of projects within +/- 25%
 - Level 1 & 2 Projects - 75% of projects within +/- 15%
- Secondary (No Target currently, information only to identify trends)
 - Phase 1 vs Let Amount
 - Phase 3 vs Let Amount

Additional information

- All construction let budget recommendations need to be reviewed by district planners and program management for district/state program budget impacts.
- Any budget, cost estimate, risk register is subject to review by program management, district management, portfolio manager, and/or operations leadership at any time.
- Changes in scope, schedule, and construction let budget shall be documented by the district and noted if approved or denied. All denials will/shall have documentation too.
- Assistance with cost estimates and risk registers is available through the shared service center personnel and the independent cost estimating personnel. Independent cost estimate verifications and Monte Carlo analysis can be obtained from Operations Division, Cost Estimation Unit.
- After the STIP/CHIP check in meetings each year, the district and operations leadership will review each project and assign a level to the project. The district will document the project's level in CHIMES
- At any time, a project can change from one level to another. The change will be reviewed by Operations Division leadership with the district.
- All the above information is guidance, and this guidance may not fit every situation. If a project encounters something out of the ordinary and this guidance doesn't quite fit, please discuss with your DE and/or Operations Division leadership.
- All the construction let budget setting and review process will be documented by the district within CHIMES and will be used for future reporting.
- Project complexity levels should be preliminarily identified as the project enters the CHIP or as a project is first considered. Project levels will be documented in CHIMES by the District.