Section 1
Scoping, Budgeting and Programming

August, 2023 version

COLORADO
Department of Transportation

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Department of Transportation

1.0 Project Development and Management

1.01 Project Development Manual Purpose

At its core, the purpose of the Project Development Manual (PDM) is to describe the most common Colorado Department of Transportation (CDOT) processes predominantly within the preconstruction phase of the project lifecycle. While PDM guidance will bleed into the construction phase in the interest of content completeness and for reader convenience, the CDOT Construction Manual is the general authority for CDOT processes after preconstruction.

Likewise, while the PDM content can overlap with technical guidance documents, other manuals are the authoritative sources of the technical information required to successfully complete preconstruction activities. For example, the CDOT Roadway Design Guide, Bridge Design Manual and Drainage Design Manual are the go-to resources for each of these respective disciplines. Content within the PDM, in general, will overlap slightly with other resources or be wholly unique. A prime example of this being “Section 3 – Environmental”. CDOT has many other available environmental resources, yet, the guidance within “Section 3 – Environmental” was specially formulated by environmental staff for Project Managers (PM’s) and is found in no other document in its entirety.

1.01.01 Key Definitions and Concepts

1.01.01.01 Project Management

Project management is the discipline of organizing and managing resources in a way that facilitates the successful project delivery within defined scope, quality, time and cost constraints. At CDOT, project management responsibilities will be applied in three phases:

Phase 1: Planning

Phase 2: Preconstruction

Phase 3: Construction

A project which is effectively managed has a clearly defined scope and strategy which is well executed, monitored, and controlled. In the end, the results meet stakeholder expectations.

1.01.01.02 PM’s

The preconstruction PM for any given project is responsible for the following:

1. Development of the detailed Scope of Work (SOW), independent Work Hour Estimate (WHE) and the Independent Cost Estimate (ICE) through in-depth coordination with each specialty unit involved with the preconstruction tasks.
2. Development of the project schedule, with coordination from each specialty unit involved with the preconstruction tasks.
3. Coordination with the Resident Engineer and region Business Office on the budgeting phases and funding (as described in “Section 1.03”).
4. Coordinating staff assignments to ensure work is done in a manner which meets the objectives of the project. PMWeb’s role assignments functionality can assist to this end.
5. Ensuring that all of the work is being completed at an acceptable quality level, on time, within budget and scope.
6. For the purpose of this resource document, a project’s technical staff shall refer to those assigned the oversight or direct application of engineering principles, or both to a project.

Where applicable, a licensed Engineer in this capacity will assume all appropriate professional liability associated with the exercising of engineering decisions. For further information on professional engineering responsibilities or liability, or both, please refer to Colorado Department of Transportation (CDOT) Procedural Directive PD 0508.1 Requirements for Use of Professional Engineer's Seal.pdf. More information on sealing requirements is provided in Section 2.

1.01.01.03 Resident Engineer

For the purposes of this resource, the Resident Engineer refers to the supervisor of an engineering staff assigned the task of applying technical expertise to a project from scoping through construction. The Resident Engineer may delegate project management activities and tasks, as deemed appropriate. The Project Manager (PM) will work under their direct supervision and be responsible for the successful coordination, oversight and completion of all project-management-related activities detailed within these guidelines.

The appointment of project management responsibilities to any particular person does not transfer license liability which otherwise resides with licensed Professional Engineers involved on a project, for example, the Engineer of Record for a design discipline or, the Professional Engineer in Responsible Charge of construction. For further information on professional engineering responsibilities or liability or both, please refer to the CDOT Procedural Directive PD 0508.1 Requirements for Use of Professional Engineer's Seal.pdf.

1.01.01.04 Steps of Good Project Management

Successful project management relies on the following work processes:

1. **Initiate** – Define what is to be done to meet the requirements of the project; Authorize the work on the project; establish the project team; define the authority, responsibility, and accountability of the project team; establish the scope of the project; communicate with all project team members and region management personnel, as appropriate; utilize the project delivery plan to document this process.
2. **Plan** – Develop a project schedule defining what must be done and by whom, how will it be done, when must it be done, how much it will cost and what will be done with it; establish contingency plans; establish communication plans.
3. **Execute** – Perform the technical work and implement the project plan.
4. **Monitor and Control** – Assess the quantity and quality of the work; comparing where the project is to where it is supposed to be per the project schedule; taking action to correct for any deviations in the project plan updating the project schedule as needed; perform iterations of steps one, two and three, as needed.
5. **Close** – Identifying and documenting lessons learned; identify and document pitfalls for future projects; share lessons learned and pitfalls identified with colleagues; celebrate your accomplishments.

To assist Project Managers (PM's), CDOT has developed and provided a variety of tools. The primary project management tool is PMWeb. PMWeb allows the PM to assign project roles and create project records for the Project Delivery Plan, Communication Plan, Lessons Learned, Project Update, Cost Estimation, and so forth. Ultimately, successful project management is up to the PM's.

Additional Resources:

Support for using PMWeb to manage projects: PMWeb Home.

1.01.01.05 Avoiding Project Management Pitfalls

Lessons learned can offer insights making way for a smooth transition to a more project management-oriented organization. Examples of project management pitfalls include the following:

1. **No time to plan** – You have little chance of guiding your project towards successful completion if you do not have a plan. Failing to plan is planning to fail and in the end requires more effort putting out fires and cleaning up messes.
2. **Mum's the word** – Err on the side of over-communicating with the people who must do the work in the development of the plan.
3. **Inflexibility** – Be prepared to revise the plan – the plan **will** change!
4. **Control freak** – Stay in the know but do not attempt to serve as a single point of knowledge for the project.
5. **My precious data** – Disseminate information generously because people are more likely to want to stay in the loop than out.
6. **Didn't see that coming** – Identifying and documenting risks is like putting up lighthouses to guide projects to safe harbor.

1.02 Statewide Planning, Funding and Budget Process

1.02.01 Overview and Budget Authority

1.02.01.01 Statewide Transportation Improvement Plan (STIP)

Federal Regulations require that state transportation departments develop a STIP. STIP contains capital and non-capital transportation projects (see Process for Project Creation Guidance Final.doc) proposed for funding under 23 Code of Federal Regulations (CFR) 450, subparts B and C; as well as 23 US Code (USC) 134 and 135. Per these regulations, Colorado Department of Transportation (CDOT) develops a four-year STIP on an annual basis offering a four-year horizon of active transportation projects.

Federal regulations require each STIP to be fiscally constrained. All federally funded transportation projects must be included in STIP. It is Transportation Commission policy to include state funded projects and local projects with CDOT oversight in STIP.

1.02.01.02 Project Planning and Budget Process

Systems, Applications and Products in Data Processing (SAP) is an Enterprise Resource Planning (ERP) system that CDOT installed in 2006. SAP is the financial system of record for CDOT and provides information through interfaces to other state of Colorado systems including the Colorado Operations Resource Engine (CORE) and the Colorado Personnel and Payroll System (CPPS). Some functions the system is used for include:

1. Payroll
2. Human Resources
3. Budget
4. Project Systems
5. Work Orders
6. Project Financials
7. Purchasing
8. Inventory

CDOT also owns an additional SAP system called Public Budget Formulation (PBF) which includes the Planning Functions (including the Statewide Transportation Improvement Plan (STIP), Revenue Forecasting, Resource Allocation, Asset Management and Maintenance Level of Service (MLOS).

The first step in the planning process is inclusion in the long-range Statewide Transportation Plan. This plan covers a minimum 20-year planning horizon. Colorado's plan is developed by staff in the Division of Transportation Development (DTD). Instead of a list of projects, the plan looks at long-range visions, strategies, and goals for specific transportation corridors throughout the state. This plan is also updated every four years as required by regulations included in 23 US Code (USC).

Once a project is consistent with the visions, goals, and strategies of the Statewide Plan, it can be included in the Statewide Transportation Improvement Plan (STIP). Projects in STIP are linked to specific plan corridors or pools. Projects are included in STIP based on priorities determined by the Colorado Department of Transportation (CDOT) regions' Transportation Planning Regions (TPR's) and Metropolitan Planning Organizations (MPOs).

In addition, CDOT has developed a 10-Year Plan which includes high priority projects that will be included in STIP as funding becomes available. This list is developed with CDOT planning partners across the state and sets priorities for major projects outside of the asset management project lists.

Once a project is included in both the Statewide Plan and STIP, it can be budgeted.

1.02.01.03 Funding Sources Typical Projects

State, federal, and local funding sources are used to provide for all modes of transportation including aviation, transit, bicycle, pedestrian, rail, bridge replacement, and highways. Colorado's highway construction program is primarily funded through the Federal Highway Users Trust Fund, the Colorado Highway Users Tax Fund, and special legislation.

Projects that are funded completely with state funds are considered Non-Participating projects. The projects have different project delivery requirements then projects that are funded with Federal funds, Participating.

Many of the funding types have specific uses and constraints. For example, Highway Safety Improvement Program (HSIP) funds can only be used for specific types of safety improvements which are also included in the safety plan. Additionally, some funds that are tied to state or federal legislation may have to be encumbered or spent prior to a specific date. If you are not sure about uses for funding types in your project you can talk to your region asset manager, region Program Reporting Transparency Office (PRTO) Rep, or your region business manager.

1.02.01.04 Revenue Forecasting

Revenue forecasts include all “reasonably anticipated” revenues known to be available to the Colorado Transportation Commission to fund capital improvements, maintenance, and operations for existing and expanded facilities and services of the state of Colorado’s transportation system.

Every four to six years, Congress passes a new surface transportation act. For resource allocation purposes, it is assumed that the federal program will continue at the same funding level and contain the same program categories.

Because of the uncertainty of revenue, especially those variable sources such as state legislation, the availability of funds may impact a project delivery schedule.

1.02.01.05 Asset Management and 10 Year Vision Plans

In most cases, a project need will be identified from one of Colorado Department of Transportation’s (CDOT’s) planning lists: Asset Management, Safety Plan, Freight Investment Plan, and so forth. CDOT currently has the 10-Year Vision Plan and asset lists to help regions focus on priorities and needs.

1.02.01.06 Asset Management Program

CDOT's Asset Management Program develops and implements risk-based strategies to ensure the department's limited funding is applied to the right project, for the right asset, at the right time. Applying the correct treatment can extend the life of an asset in a cost efficient way. Preservation is much cheaper than reconstruction.

The asset programs managed by CDOT include:

1. Surface Treatment
2. Bridges
3. Maintenance
4. Buildings
5. Intelligent Transportation Systems (ITS’s)
6. Road Equipment
7. Culverts
8. Geohazards

9. Tunnels
10. Traffic Signals
11. Walls
12. Rest Areas

The Colorado Department of Transportation (CDOT) has developed its Transportation Asset Management Plan (TAMP) to define a framework for implementing asset management strategies. The most recent Transportation Asset Management Plan is published on CDOT's Transportation Asset Management webpage.

Each year the Transportation Commission approves the planning budgets for the asset program. The asset managers at Headquarters and within the region use the budget to create a prioritized project list. The region asset managers maintain the project lists and the region budget allocations. The region business manager can help identify the region asset managers.

1.02.01.07 Developing the Statewide Transportation Improvement Plan (STIP)

Development and ongoing maintenance of STIP is managed by staff in the Division of Transportation Development (DTD), in coordination with the Office of Financial Management and Budget (OFMB) at CDOT Headquarters. DTD and OFMB work closely with region planners, located in each CDOT region, to ensure that projects are included and updated as necessary. In turn, the region planners also work closely with their respective region Business Offices and engineering staff, as well as with local officials and representatives from each Transportation Planning Region (TPR).

All STIP projects must be consistent with specific Statewide Plan Corridor Visions before they can be included in STIP. CDOT budget categories and strategies must also be selected for each STIP project. The connection is made in the projects' master data in Systems, Applications and Products in Data Processing (SAP) and verified by DTD staff for consistency with the Statewide Plan.

At the beginning of any STIP development cycle, region planners must follow the process laid out in the Project Priority Programming Process (4P) guidelines on (STIP webpage). This process sets forth the parameters for ensuring an open public process for including projects in STIP. Region planners work with planning partners in TPR's to prioritize transportation projects for the next STIP cycle. The 4P process requires each CDOT region to hold individual meetings with each TPR, and then hold a joint meeting with all of its TPR's to set project priorities. Region planners may elect to also meet with individual counties, but this is not required.

Once priorities are selected, projects are entered in Systems, Applications and Products in Data Processing (SAP) and included in the draft Statewide Transportation Improvement Plan (STIP) document. Fiscal constraint is verified by the Office of Financial Management and Budget (OFMB) before requesting the Transportation Commission (TC) to release the Draft STIP for public review and comment.

After public review and comment, the Commission holds a public hearing to gather final comments on the draft document. Any necessary changes are made to the draft and submitted to the Commission for adoption. The adopted STIP is then forwarded to the Federal Highway Administration (FHWA) and Federal Transit Administration (FTA) for final approval.

Table 1.02 Below is a summary of the **Annual Development Schedule**:

Month(s)	**Step in the Process**
June to September	Project Priority Programming Process (4P) meetings
October to November	Joint Transportation Planning Region (TPR) meetings
December to February	Regions submit projects for the draft STIP
March	Draft STIP released for public comment
April	Statewide Transportation Advisory Committee (STAC) discussion of draft STIP Public hearing with the TC for draft STIP
May	TC adopts STIP
June	FHWA/FTA approve STIP
July 1	New STIP effective

1.02.01.08 STIP Projects

The STIP contains two types of projects: Regionally Significant and STIP Pool projects. A Regionally Significant project is assigned a unique STIP number pertaining to one STIP Project. Typically, a Regionally Significant project is a larger project and is considered significant to the TPR, or region, it serves.

Some Regionally Significant projects are set up as a STIP Pool in order to provide better transparency to the public regarding the phases for the project. The STIP parent project will be titled for the overall project, for example, I25 North, and each subproject below the parent will pertain to the larger project as part of the whole, for example, Segment 5.

More often, however, Statewide Transportation Improvement Plan (STIP) Pool projects are location-specific projects that are listed under a parent STIP number. Examples would be a region's Surface Treatment or Bridge On-System Pools. STIP Pools provide more flexibility for both budgeting and STIP amendments.

See Samples of Both Regionally Significant Projects and STIP Pools.pdf.

1.02.01.09 Fiscal Constraint

STIP must be fiscally constrained to be approved by the Federal Highway Administration (FHWA) and and Federal Transit Administration (FTA). The Colorado Department of Transportation (CDOT) looks for constraint by CDOT region, CDOT program, and fiscal year for federal and state dollars only. Local dollars are not constrained.

Fiscal constraint for STIP is determined in Systems, Applications and Products in Data Processing (SAP) by calculating program budget pool amounts against what is STIP'd and budgeted. Funding program amounts are determined through program distribution. These amounts are loaded and stored in Program Budget Pools in the FM Module in SAP after Program Distribution is adopted by the Transportation Commission. As transactions occur in the FM budget pools, fiscal constraint is based on the adjusted totals using the following formula:

Unbudgeted = Amount Programmed in STIP minus Budgeted

Unprogrammed = Budget Pool minus Unbudgeted total from above

This remaining unprogrammed amount is what is still available to the STIP toward other projects. Budget actions must also be constrained to both the STIP and Regional Pool. Within a STIP Pool, a STIP Work Breakdown Structure (WBS) element may be budgeted more than it is programmed, as long as the parent STIP maintains fiscal constraint.

Fiscal constraint may be verified daily by using the STIP Reconciliation Report available in the CDOT Application for Reporting (CAR) system. Region planners and Business Office staff can assist you if you have trouble finding or using this report.

1.02.01.10 STIP Amendments, Administrative Modifications, and Transportation Improvement Program (TIP) Amendments

Once STIP is adopted, it can be modified as needed. There are three types of STIP changes: STIP amendments, administrative modifications, and TIP amendments. For detailed information, please refer to the STIP Amendment Guidance on (STIP webpage). A brief summary of each type of modification is provided below.

Statewide Transportation Improvement Plan (STIP) Amendments:

Must go through a 30-day public involvement process and then be approved by the Transportation Commission. After the Commission approves these amendments, they are forwarded to Federal Highway Administration (FHWA) and Federal Transit Administration (FTA).

For amendments that occur outside of a Metropolitan Planning Organization (MPO)-area there are four different actions that can trigger an amendment:

- More than $5,000,000 is added to or subtracted from the original approved budget
- Environmental finding is necessary
- Major scope change, such as adding more than one mile of pavement reconstruction
- New standalone projects that are Regionally Significant

STIP Administrative Modifications:

Are minor changes to STIP projects that do not fall under any of the amendment requirements. These administrative modifications may be processed without a public comment period or Commission or FHWA and FTA approval. These changes are effective in one business day.

Transportation Improvement Program (TIP) Amendments:

Metropolitan Planning Organizations (MPOs) must follow separate federal regulations to develop and amend their TIPs. Once a MPO Board/Council adopts a TIP, it must be approved by the governor. The governor also approves any TIP amendments that are made. In Colorado, the governor has delegated authority to the Colorado Department of Transportation (CDOT) executive director to approve TIP amendments (the governor still approves new TIPs.

TIP amendments are incorporated into STIP administratively once approved by the governor, or their delegate. However, TIP amendments may take up to four months to be completed by the MPO, depending upon each MPO's individual process. Once a TIP amendment is approved by the MPO Board and submitted to CDOT, it is aggregated on a monthly basis and passed along to the executive director for approval. Afterwards, this is sent to FHWA and FTA for informational purposes.

1.02.01.11 Statewide Transportation Improvement Plan (STIP) Reports

There are several STIP reports available for your use in the Colorado Department of Transportation (CDOT) Application for Reporting (CAR). The most common reports are the STIP Summary Report and the Reconciliation Report. If a user has any questions about how to

pull a report, they can reach out to a Statewide Transportation Improvement Plan (STIP) manager in either the Division of Transportation Development (DTD) or the Office of Financial Management and Budget (OFMB), as well as their region planner.

STIP Summary Report:

The STIP Summary Report details the funding for all STIP projects in the current STIP. It shows the STIP number, the project description, the fund program and fund source, and the amount of funding by fiscal year. Since STIP can be amended on a daily basis, this report reflects STIP by providing current STIP information on a day-to-day basis. The report is sorted by Colorado Department of Transportation (CDOT) region and then by STIP number. The report allows you to see all the funding programmed to a specific STIP number in one place. Each week, updated versions of the STIP Summary Report and Enhanced STIP Summary Report are posted on the external CDOT site (STIP webpage).

STIP Reconciliation Report:

The purpose of the STIP Reconciliation Report is to show that STIP is fiscally constrained. The report shows funding for STIP projects broken down by CDOT region, funding program, and fiscal year. This report also shows budget action totals taken against any given STIP number within specific funding programs.

The Reconciliation Report provides a very good snapshot of each funding program overall. It provides crucial information concerning how much money has been programmed in STIP versus how much has been budgeted and what is remaining both to budget or program. However, using the Reconciliation Report to track specific STIP project information is not recommended because information is sorted by funding program and not by STIP projects.

Access to Reporting:

The STIP Summary Report may be found online (STIP webpage). It is updated weekly. The STIP and the STIP Reconciliation Report may also be found in the CDOT Application for Reporting (CAR) via the Systems, Applications and Products in Data Processing (SAP) portal on the internal website. Region planners and OFMB STIP managers can help the user if they need assistance in accessing this or other reports.

1.02.01.12 STIP Resources

The DTD and Office of Financial Management and Budget (OFMB) manage STIP and provide guidance to the regions regarding STIP development and amendments. If you need assistance with STIP, please contact the DTD STIP manager.

Additional Resources:

Statewide Transportation Improvement Plan (STIP) information on (STIP webpage)

Statewide Transportation Plan (2045) on Your Transportation Priorities site

10-Year Vision on Your Transportation Priorities site

Transportation Asset Management on Programs site

1.02.02 Special Topics in Statewide Planning and Budget

1.02.02.01 Statewide Bridge & Tunnel Enterprise (BTE) and Funding Advancements for Surface Transportation and Economic Recovery (FASTER)

Background:

The legacy Colorado Bridge Enterprise was formed in 2009 by the Funding Advancements for FASTER legislation (Senate Bill 09-108) to accelerate the repair, reconstruction, and replacement of rapidly deteriorating bridge infrastructure throughout the state. Subsequently, the passage of a landmark transportation bill (Senate Bill 21-260) renamed Colorado Bridge Enterprise to BTE or Enterprise, and expanded the scope of the Enterprise to include tunnel projects in 2021. Per Colorado Revised Statutes (CRS) 43-4-805, BTE operates as an autonomous government-owned business within the department charged with financing, repairing, reconstructing, and replacing any designated (poor-rated) bridge in the state and completing tunnel projects.

BTE is constituted as an Enterprise per Article X, Section 20 of the Colorado Constitution, which allows BTE to impose a bridge safety surcharge fee, bridge and tunnel impact fee, and bridge and tunnel retail delivery fee to accomplish its business purpose. Enterprise status also allows the program to issue revenue bonds and enter into agreements with governmental and non-governmental agencies for loans or grants. Projects funded through BTE have unique requirements designed to maintain statutory compliance and the program's Enterprise status. General inquiries on BTE or requests for support can be directed to the Enterprise's shared mailbox at: cdot_bteadmin@state.co.us.

BTE Oversight and Staffing:

BTE has a Board of Directors (BOD), or board, that is independent of the Colorado Transportation Commission. The board manages the business and affairs of the Enterprise and consists of the members of the Transportation Commission, as determined pursuant to

Section 43-1-106(1), Colorado Revised Statutes (CRS) The board appoints, with the consent of the Colorado Department of Transportation (CDOT) executive director, an Enterprise director who directs or manages overall Enterprise staff and functions. An organization chart illustrates, Statewide Bridge & Tunnel Enterprise (BTE) Organizational Chart.pdf.

To execute and achieve the goals of an independent government-owned business and maintain statutory compliance, BTE staff participate in the development of a project from concept through completion. BTE will assign a staff member(s) to each project to serve as a technical expert and primary liaison to CDOT region staff. BTE staff will support the region by:

1. Providing input on individual project goals, scope, budget, structure design, procurement, and schedule to maintain consistency with program objectives;
2. Performing BTE Project Eligibility Reviews of project features at appropriate intervals during development to ensure that only eligible project features are funded through the BTE;
3. Coordinating project budget requests;
4. Tracking the performance of each project through monthly schedule reporting and advising the BTE Schedule Change Control Board (SCCB); and
5. Assisting with other policies, procedures, and processes that are unique to BTE funded projects.

The SCCB acts in an advisory capacity to the board, the BTE director and BTE staff, with the goal of addressing underperforming projects, as determined through monthly schedule analysis, in accordance with the applicable BTE guidance documents. Information on the BTE project schedule reporting process is provided later in the BTE section.

Policy Directive BE16.0 and Procedural Directive BE16.1:

If it is anticipated that a project will be BTE funded, BTE staff should be contacted prior to any planning activities to review project eligibility, priority, program resource availability, and other unique considerations for BTE projects. Detailed BTE roles and responsibilities along with other pertinent requirements for BTE projects are outlined in a Policy Directive PD BE 016.0 Oversight of Funding for State Bridges and Tunnels.pdf and a Procedural Directive PD BE 016.1 Management of Funding and Selection of Bridge and Tunnel Projects.pdf.

1.02.02.02 BTE Project Requirements

Scope for BTE Funded Projects:

A project must meet specific criteria to be eligible for the Statewide Bridge & Tunnel Enterprise (BTE) funding. Policy Directive BE16.0 and Procedural Directive BE16.1 outline these criteria and the prioritization and selection process for bridge and tunnel projects funded through the Enterprise. BTE funding can only be used for projects to repair, rehabilitate, reconstruct, or replace “designated bridges” as defined by the statute. It should be noted that there is no legislative mandate for BTE to address every designated bridge, and that other funding sources can also be used for this purpose. However, BTE strives to address as many bridges as possible with the resources available. Designated bridges must meet the three following criteria:

1. Rated poor based on the National Bridge Inspection Standards rating scale,
2. Classified as a major structure (over 20’-0” span), and
3. Located on the state highway system (Colorado Department of Transportation (CDOT)-owned).

Funding can also be used for projects to repair, maintain, or enhance tunnels that are located on the state highway system. BTE bridge funding is intended to be used for in-kind bridge replacements so non-bridge scope should be limited to what is necessary to replace or rehabilitate the bridge and bring the bridge up to current roadway and structural standards. For tunnel projects, the Project Manager (PM) should restrict BTE-funded tunnel scope to what is required to repair, maintain, or enhance the tunnel asset. Scope items outside of the tunnel, such as roadway approach work, should be limited to the extent possible. Complex projects involving an alignment shift or Environmental Assessment, or Environmental Impact Statement compliance have unique eligibility considerations, so contact should be made with BTE staff early in the project planning process.

To the extent possible or practical, the PM should avoid increasing the project scope during the project development process. Such a change in scope may create the need for additional funds, a different type of funding, or both for the project.

Eligibility Review:

To ensure that Enterprise eligibility requirements are met, projects will go through the BTE Project Eligibility Review process. These reviews should begin early in the project planning process and should be revisited as the project scope is refined. The assessments include reviewing the Scope of Work (SOW), plans, specifications, cost estimates, and all other pertinent project information (studies, National Environmental Policy Act (NEPA) documents, and so forth). BTE guidance documents will be used to determine the split of BTE eligible and ineligible scope items. In cases where no eligibility guidance exists, it may be necessary to use engineering judgment or experience to determine the split of eligible and ineligible items. The BTE project liaison or delegate will perform the initial eligibility review and review findings

with region staff to gain consensus. Federal Highway Administration (FHWA) and Attorney General's Office involvement may be warranted for projects with unique or complex scope elements. After a consensus is reached by all stakeholders, the Statewide Bridge & Tunnel Enterprise (BTE) Project Eligibility Review, which will formally document the BTE funding limits, will be memorialized in an eligibility review memo by BTE staff.

In cases where BTE funding is being used to perform bridge or tunnel work as part of a larger project, or if a project is found to have ineligible scope items, the Project Manager (PM) will be required to set up a combination project with a unique project subaccount number(s) to delineate eligible and ineligible scope items into separate projects. A proportional share of items applying to both scopes, such as mobilization, traffic control and so forth, should be assigned to each subaccount. When setting up the combination project, the larger of the two projects will be assigned as the parent project.

The BTE project liaison will be available to advise the region on the proper delineation of eligible and ineligible items throughout this process as requested

Setting Up a BTE Project in Systems, Applications and Products in Data Processing (SAP):

Setting up BTE projects in SAP requires the PM to use different identification codes than Colorado Department of Transportation (CDOT) projects, as shown below. To simplify the process, use the BTE Capital Engineering Projects template to auto-populate these fields. Please note that tunnel projects or bridge preventative maintenance projects that will be capitalized to a CDOT asset, not a BTE asset, will require that the project is set up as a CDOT project with a unique provider code to apply the appropriate accounting treatment. Please contact the BTE project liaison for any questions related to BTE funded project setup.

1. Fund Number: 538 is the Fund Type
2. Fund Center: 400
3. Project Prefix: FBR
4. Org Group: B8800-538 is the Responsible Cost Center
5. Profit Center: 5000-538 instead of the normal CDOT value 5000-010
6. Investment Profile: Z00992 instead of the normal CDOT value of Z00990
7. Unlike typical CDOT projects, budget actions for funding BTE projects will be completed by BTE staff and Office of Financial Management and Budget at Headquarters rather than at the regional level.

Schedule and Schedule Change Control Board (SCCB):

Statewide Bridge & Tunnel Enterprise (BTE) staff uses a programmatic schedule to track the performance of ongoing and planned bridge and tunnel projects and report to SCCB as outlined in Procedural Directive 16.1. The phases or activities included in the schedule for each project will be determined based on the selected project delivery method and other project specific considerations. The pertinent preconstruction phases (right of way, utilities, design, environmental, and miscellaneous) and the construction phase are typically included, however, the appropriate phases will be identified through coordination between region and BTE staff.

BTE staff will coordinate with region staff to baseline each established milestone or activity as required based on BTE guidance documents. Once the project baseline is established, the schedule is updated monthly with physical progress achieved to date for milestones or activities using input requested from region staff. BTE requests monthly schedule updates from Project Managers (PM's) through use of Google Forms and emails sent from a shared email account, cdot_bteadmin@state.co.us. When a PM completes a form and submits, the responses will be reviewed by BTE staff and incorporated into the schedule.

The schedule calculates key metrics such as Earned Value (EV), Planned Value (PV) and Schedule Performance Index (SPI). These metrics are calculated at the phase, project, regional and program levels and are reported to regional leadership and SCCB. A SCCB meeting is held every two months to review the schedule and discuss the status of underperforming projects. Adjustments to the project baseline schedule require approval from the SCCB. BTE staff are responsible for facilitating the SCCB meeting and can assist the region with the preparation of baseline schedule change requests upon request.

Project Funding Requests:

BTE staff will follow the guidance outlined in its policy directives when evaluating and recommending projects for funding to the BTE Board of Directors (BOD). These requests are presented monthly (on an as needed basis) at the BTE BOD meeting, via the BTE budget supplement process. BTE staff circulate a monthly call for budget supplement requests to region staff. Requests and all supporting documentation are due to BTE staff on the third Wednesday of each month for a budget supplement that will be considered by the BOD in the subsequent month.

For inquiries on the BTE budget supplement process or to be added to the email distribution list, please contact BTE staff at cdot_bteadmin@state.co.us.

When requesting a design phase budget supplement, BTE requests the following supporting documentation:

1. Work hour project cost estimating worksheet to estimate in-house and consultant costs.
2. Project expenditure forecast showing the month and fiscal year of expenditures.

When requesting a construction phase budget supplement, Statewide Bridge & Tunnel Enterprise (BTE) requests the following supporting documentation:

1. Work hour project cost estimating worksheet to estimate in-house and consultant costs.
2. Construction Engineering (CE) worksheet to determine the project specific CE rate.
3. AASHTOWare/TRNS*port estimate.
4. Independent cost estimate for each consultant task order (completed by in-house personnel).
5. Project expenditure forecast showing the month and fiscal year of expenditures.

The Work Hour and Project Cost Estimate Worksheet and CE Calculation Worksheet can be found in the Bridge and Tunnel Enterprise Resource Web Folder of multiple documents.

Requests to add additional budget to a project will be subject to the Policy Directive PD 0703.0 Annual Budget, Project Budgeting and Cash Management.pdf guidelines and the project transaction Project Related Transactions matrix in the e-February 2023 TC – PD 703.0 Matrix – FINAL.xls established by the Office of Financial Management and Budget (OFMB).

Depending on the amount of the requested increase, some requests may require approval from the Executive Management Team (EMT) or Board of Directors (BOD). For example, a project needs additional construction phase funding due to a change condition. If the cumulative value of this request and prior requests to increase the budget is under the Policy Directive 703.0 staff authority threshold, the fund transfer can be completed in Systems, Applications and Products in Data Processing (SAP) at the discretion of BTE and OFMB staff. If the cumulative value of the budget increase(s) exceeds the Policy Directive 703.0 threshold, EMT or BOD's approval will be required to process the request. In this case, BTE staff will request EMT approval in coordination with OFMB and will process the budget action in SAP if the request is approved.

If BOD approval is required, the request for additional funds will be submitted to BOD for approval via the monthly BTE budget supplement process. If the request is approved by the BOD, BTE staff will process the budget action in Systems, Applications and Products in Data Processing (SAP) in coordination with the OFMB.

In addition to Statewide Bridge & Tunnel Enterprise (BTE) requirements above there are additional items that need to be provided to your Business Office to support a request for an increased budget for construction are:

1. Current project financial statement (Form 65 Project Financial Statement)
2. Current overs/unders report
3. Draft Form 90 Contract Modification Order (CMO)

Adding Other State or Local Funding Sources:

For project planning purposes, it should be assumed that other state or local agency funds cannot be used for a BTE funded project unless a combination project is being utilized. The Project Manager (PM) will be required to set up a combination project with a unique project subaccount number(s) to delineate eligible and ineligible scope items into separate projects. Other state or local agency funding sources can be used to fund non-BTE eligible scope items through the project containing the ineligible scope items. The combination project will be entered in AASHTOWare/TRNS*port and the project with the largest budget will be the parent project, regardless of funding source.

Federal Participation:

BTE's primary revenue sources, the Funding Advancements for Surface Transportation and Economic Recovery (FASTER) Bridge Safety Surcharge, Bridge and Tunnel Impact Fee, and Bridge and Tunnel Retail Delivery Fee, are state funding sources. Therefore, projects that are solely BTE funded may be exclusively state funded, however, BTE projects can be partially funded through federal funding sources. Common examples include:

1. Projects that are awarded federal discretionary grant funding.
2. Projects that were initially funded by Federal Highway Administration (FHWA) and ultimately transferred to BTE and completed using BTE funding.
3. Projects funded through financing programs with FHWA funds obligated for debt service payments.

Please coordinate with the BTE project liaison to determine whether a project has federal funding sources.

Construction Engineering (CE) Pool Exemption:

BTE projects are required to be CE Pool Exempt as approved by the chief financial officer and Chief Engineer to avoid the comingling of funding sources. Being Pool Exempt, BTE does not

include the base rate, which is the major deviation from the guidance presented under 1.03.03.07 Construction Engineering (CE) & indirects. Like Colorado Department of Transportation (CDOT) projects, Statewide Bridge & Tunnel Enterprise (BTE) projects do not have a fixed CE rate and the CE cost is calculated on a project-by-project basis using the estimated cost for in-house and consultant construction engineering.

For projects with direct-to-project CE charges, in-house and consultant project personnel are required to charge their time directly to the construction phase of the project rather than to the region CE Pool. Since all construction engineering expenditures associated with BTE projects are direct-to-project, all work must be estimated and budgeted accordingly. The charges that need to be accounted for in the estimate include, but are not limited to the following:

1. CDOT personnel charges to the project phase, including benefits (timesheet charges);
2. Consultant task orders for post design services and construction engineering;
3. Indirect charges at the current rate agreed to with the FHWA (applied to both internal charges and consultant charges); and
4. Materials test costs from the central lab.
5. See 1.03.04.06 Construction (Work Breakdown Structure (WBS) - XXXXX.20.10) for comprehensive list of eligible construction phase costs.

All CE costs should be estimated on the Work Hour and Project Cost Estimate Worksheet and the CE Calculation Worksheet as part of the process for estimating the budget request for the construction phase budget supplement. These worksheets can be found in the Bridge and Tunnel Enterprise Resource Web Folder of multiple documents. The previous subsection contains additional information regarding BTE project funding requests.

When developing the CE estimate, all meetings required throughout the construction phase should be considered. This includes, but is not limited to, the following:

1. Partnering
2. Preconstruction
3. Presurvey
4. Bridge demolition
5. Preerection
6. Prepour
7. Prepaving

8. Regular coordination and scheduling meetings, and
9. Any other meetings the project is expected to require

When estimating the actual hours required for construction engineering, the following personnel and support units should be considered to ensure all potential charges are estimated:

1. Resident Engineer
2. Project Engineer
3. Inspectors (overtime for non-exempt employees should be considered)
4. Testers (overtime for non-exempt employees should be considered)
5. Region Materials Lab (site visits, Independent Assurance Tests (IAT's), deck pour assistance, submittals)
6. Region Utilities Unit
7. Central Lab Headquarters (HQ) test costs for samples submitted to HQ for testing
8. Staff Bridge
    a. Fabrication inspections
    b. Construction assistance
    c. Required project acceptance final bridge review
9. Bridge Designer – Staff Bridge or consultant as applicable
    a. Review of shop drawings
    b. Construction assistance
10. Staff Geotechnical Personnel
11. Environmental Group Support (National Pollutant Discharge Elimination System (NPDES), Threatened and Endangered (T&E) inspections)
12. Public Relations Support
13. Finals Engineers
    a. Processing Change Modification Orders (CMO's) in Site Manager
    b. Finals package review and check
14. Staff Branches (Area Engineers and Assistant Area Engineers)
    a. CMO review/assistance

b. Other assistance

15. Consultant Construction Staff
16. Other Staff as Required

The Program Reporting Transparency Office has developed a Construction Management (CM) Staffing Tool, in the Tools Catalog of the Project Management site, to assist project teams with developing cost estimates.

Colorado Department of Transportation (CDOT) Indirect Charges:

CDOT indirect charges are collected at the current rate for all work charged on Statewide Bridge & Tunnel Enterprise (BTE) projects.

Setting up a BTE Project in AASHTOWare and in Systems, Applications and Products in Data Processing (SAP) Form 65 Project Financial Statement:

Bridge & Tunnel Enterprise projects need to be set up in AASHTOWare/TRNS*port and SAP in accordance with CDOT's preconstruction guidance. Further details and user guides can be found on the AASHTOWare project website.

Once a Form 65 has been created for a BTE project, it is critical that the correct estimated amounts are on the Form 65. If inconsistencies are found, please reach out to Projects and Grants Accounting in the Division of Accounting and Finance.

The customer email address for inquiries is dot_projectsandgrantsaccounting@state.co.us or additional resources can be found on their Compliance for Accounting & Finance.

Asset Transfer from CDOT to BTE:

In accordance with intergovernmental agreements between BTE and CDOT, the Enterprise is responsible for the future maintenance of the bridges that are funded through the program. To accomplish this, BTE is required to take ownership of these bridge assets as follows:

1. For a bridge that is repaired or rehabilitated and maintains its existing structure number, the ownership transfer will occur upon completion of design and prior to the commencement of construction through a BTE Board of Directors resolution.
2. For a bridge that is replaced, a new structure number is created and BTE ownership of the new bridge is recognized upon project completion through an annual BTE Board of Directors resolution.

Statewide Bridge & Tunnel Enterprise (BTE) staff will facilitate the asset transfer and recognition processes. For tunnel projects, asset ownership is not transferred.

1.02.02.03 Shopping Carts for BTE Projects

A shopping cart required for BTE projects will need to be created differently than a typical Colorado Department of Transportation (CDOT) capital engineering project.

General Requirements:

For any shopping cart created for a BTE project, a key difference is that “Plant 7001” needs to be used rather than the Plant of your region. Unfortunately, the plant field in Service Request Management (SRM) for shopping carts is not an editable field. If a Plant other than 7001 is entered and saved incorrectly, the shopping cart will need to be rejected and a new shopping cart created with the correct plant.

BTE shopping cart releases are available for all Program Engineers statewide to complete. They are also available for all Business Office managers to complete for the second required release. The intent is for the responsible region to approve their own shopping carts.

Shopping Cart for Construction Engineering (CE) Services:

The General Ledger (GL) account number for BTE projects will be based on whether there are federal funds on the project or if it is state funded only.

1. GL number for BTE funded projects is 4192000010
2. GL number for BTE projects with federal participation is 4192000011

A caveat is that even though your project may not have a separate federal funding source, such as FABL1CE or FL1CE, it still may have federal funds associated with debt service payments, which would require the shopping cart to get set up as federal participation. Additional information on federal participation in BTE projects can be found in the previous BTE subsection.

1.02.02.04 Other Funding Sources and Special Project Designations

Emergency Projects:

An emergency is an unexpected event creating an immediate threat to public health, welfare, or safety, the functioning of state government, or preservation or protection of property which requires immediate response. There is insufficient time to obtain a written waiver of the requirements for issuance of a commitment voucher pursuant to this fiscal rule before requiring

goods or services to respond to the emergency. If a situation does not pose an immediate threat to the public health, welfare, or safety, the functioning of state government, or preservation or protection of property, it is not an emergency and these procedures cannot be used.

Fiscal Rule 2-2 of the State of Colorado Fiscal Rules allow Colorado Department of Transportation (CDOT) to make disbursements for emergency procurements upon presentation of invoices, receipts or other statements describing goods or services purchased and the amount to be paid. Goods and services necessary to respond to an emergency may be procured immediately, without issuing a commitment voucher or obtaining a written waiver from the state controller where all of the following conditions are met:

a. The nature of the threat requires an immediate response and there is insufficient time to issue a commitment voucher;

b. The procurement is authorized by the individual who has final executive authority for an agency, or his or her delegate;

c. The procurement is made with such competition as is practicable under the circumstances;

d. A commitment voucher is executed as soon as possible to define future performance obligations, if any, of the vendor and state, as required by fiscal rules; and

e. The agency notifies the Office of the State Controller in writing as soon as possible of the circumstances, goods and services purchased, and the dollar amount of the commitment.

In an emergency, only those goods and/or services that are necessary to respond to the emergency may be acquired without the execution of a state contract. Emergency procurements shall be made with such competition as is practicable under the circumstances. Once the emergency is ended, conventional contracting techniques must be used for any remaining work.

By declaring an emergency it is recognized by the state controller, CDOT controller, and CDOT upper management that time is of the essence. Because time is critical, the most cost effective procedure from a budget perspective may not be the most prudent course of action. The Project Manager (PM) must first focus on alleviating the immediate threat to the public health, welfare or safety, the functioning of state government, or the preservation or protection of property. The PM must also make wise use of the state's resources.

A written report of emergency services or purchases must be made to the agency Chief Financial Officer (CFO) and the state controller no later than the end of the next business day. Fiscal Rule 2-2 grants the executive director the authority to obtain goods and services in an

emergency without execution of a state contract. The executive director has delegated that authority to the deputy executive director and the Chief Engineer. Only the executive director or one of the delegates may declare an emergency pursuant to Fiscal Rule 2-2.

When an emergency occurs, the region authority, Region Transportation Director (RTD) or maintenance superintendent, should be notified of the nature of the emergency.

The region authority will:

1. Draft a written declaration of the emergency to be signed by the executive director or their delegate detailing the immediate threat which requires an immediate response per Fiscal Rule 2-2. This notice shall detail the limits of the emergency work and the contracting method to be used for any work which will be required subsequent to the immediate emergency.
2. Designate a Project Manager (PM) who is the Colorado Department of Transporation (CDOT) employee authorized to acquire the resources necessary to prudently respond to the emergency. The PM is also responsible for oversight of the Contractor's activities.

The PM will:

1. Solicit three bids to procure a Contractor for the emergency work. In the event the emergency will not allow for such solicitation of three bids, they must document the reason why and all steps taken to ensure the process is as competitive as is practical.
2. Contact the region authority periodically to provide progress updates.
3. No later than the end of the next business day after the emergency occurs, forward the written authorization to use the emergency procurement process signed by the executive director or their delegate to the state controller.
    a. Written request: The PM must submit a written request for emergency contracting to the Chief Engineer. The written request must include the items listed below.
        i. A justification that an emergency exists in accordance with Fiscal Rule 2-2 (above). The explanation must be complete enough to describe the problem and how it qualifies as an emergency.
        ii. An explanation of why the normal procurement procedures will not permit procurement of a Contractor quickly enough to address the emergency. (The request should state the time that will be required to obtain a Contractor using the normal procurement process and why the emergency requires a quicker response). Please note the Engineering

Contracts manager may authorize a two week Ad for projects when circumstances warrant an abbreviated advertisement period. Therefore an explanation must show why a two week Ad period would not permit a sufficient response to the emergency.

iii. The scope of the emergency work, the limits of the project and the estimated cost including Construction Engineering (CE) and indirects.

b. Report to controller: The Project Manager (PM) must make a written report of the circumstances and the nature and value of the commitments to the Colorado Department of Transportation (CDOT) controller and to the state controller.

4. No later than the end of the next business day after the emergency occurs, submit a written request for emergency contracting to the Engineering Contracts Unit.

Commensurate with the circumstances of the emergency, the most competitive process possible should be utilized to select a Contractor. The following procedures will be used:

1. Preliminary Investigation: The PM will perform the preliminary investigation and determine the best course of action. This involves determining what work needs to be done, how much needs to be done, and how it will be paid. For many emergency responses, the rapid response required and the unknown details of the work will dictate that the work be measured and paid for on a force account basis. The cost of the work can be estimated using pay items and quantities, independent cost analysis, or a combination of both. The following items must be determined:

    a. The scope and nature of the emergency work.

    b. Start date and time frame for completion.

    c. Pay items and estimated quantities (where appropriate).

    d. Estimated total construction phase cost, which includes construction costs with CE base rate applied, CE direct-to-project charges, and indirects. See “Section 1.03.03.06” Project Estimate for more details.

    e. Method of measurement and basis of payment.

2. Solicitation: As circumstances allow, bids shall be solicited by phone or email from at least three qualified Contractors that can respond quickly. It is acceptable to solicit a bid from a Contractor already working in the area. If the circumstances of the emergency, such as time constraints, limited interest, or lack of qualification makes it impractical to solicit three bids, these reasons must be documented on a project by project basis.

Note: Issuance of a Change Modification Order (CMO) to add the emergency work to an existing project with a Contractor constructing a project nearby is prohibited. If the work was not contemplated by the original solicitation for that Contractor, then it is beyond the scope and the price agreed to in that contract. A violation of Colorado Department of Transportation (CDOT) procedures and state statutes applicable to government contract bidding would result if CDOT disregarded this prohibition. In such a situation, the work must be done under a separate contract. A nearby Contractor may do the work, but a new contract would be needed for the new work.

3. Force Account Work: If a force account is necessary, all Standard Specifications for Road and Bridge Construction, as amended (Standard Specifications) shall apply. Such work shall be paid for in accordance with “Subsection 109.04” of the Standard Specifications. If there are extenuating circumstances that make it impossible to do so, clear evidence documenting the specific circumstances that prohibit compliance with the Standard Specifications must be produced and authorized by the Region Transportation Director (RTD) in writing. This is required for any emergency project that exceeds labor and equipment rental rates or any emergency project that cannot provide certified invoices to document fair prices. For example, the emergency may justify non-stop work activity for a short duration, which generally warrants higher rates.

   Contact the Engineering Estimates and Market Analysis Unit of the Construction Engineering Branch, as needed, for assistance in providing the required evidence. Force account work on emergency projects may not continue for more than two weeks without express written consent of the executive director, the deputy executive director or the Chief Engineer. In no event shall force account work on an emergency project be continued beyond one month.

4. Work Authorization: A written authorization on CDOT Form 105 Speed Memo, must be given to the Contractor performing the emergency work prior to the commencement of work. The speed memo must either provide the Contractor notice that the Standard Specifications apply to the work to be performed or clearly state the agreed upon rates for labor and equipment. The Contractor and the Project Manager (PM) or Project Engineer must sign and return the speed memo before proceeding. The written authorization must also include the following:

   a. Scope of work and project limits
   b. The required time to start work
   c. Expected duration of the work
   d. Estimated quantities

e. Method of measurement

f. Estimated total cost of the work

Finally, all speed memos must include the following statement at the end of the memo, “By signature below, the Contractor agrees to perform the work and be compensated as detailed above.”

5. Contracting Information: As soon as practical, the Project Manager (PM) must submit the following information to the Engineering Contracts Unit for the preparation and execution of the emergency contract:

    a. A copy of the request for emergency contracting approved by the Chief Engineer.

    b. All required procurement documentation and a description of the method used to select the Contractor, including an explanation if less than three Contractors were solicited, and a detailed justification if there was any deviation from department policy.

    c. The basis of payment for the contract:

        i. When the work is to be paid on an agreed unit price, submit the agreed prices, units, and estimated quantities, including justification for using the agreed unit price.

        ii. When a force account is used, documentation for payment must be submitted in accordance with “Subsection 109.04” of the Standard Specifications. If the hourly rates to be paid for labor and equipment exceed those that would be paid in accordance with “Subsection 109.04”, submit the agreed to rates and the justification for using the higher rates.

6. Contract.

    a. Payment prior to contract signing: Disbursement may be made upon receipt of invoices, receipts or other statements describing the goods or services utilized and the amount to be paid. However, a contract must be executed as soon as possible to define future performance obligations.

    b. Preparation and execution of contract: The Engineering Contracts Unit will prepare and execute the appropriate contract document as soon as practical after the emergency occurrence.

7. Administration of the Emergency Contract: The appropriate Colorado Department of Transportation (CDOT) region will administer the contract for the emergency work in accordance with CDOT policies and procedures.

8. Immediate Response: This procedure is to be used for immediate response to the emergency situation. Once the situation no longer constitutes an immediate threat to public health, welfare, or safety, the functioning of state government, or preservation or protection of property, it is no longer an emergency. Continuing work after dealing with the emergency requires evaluation of the situation and a decision of what contracting method to use for work subsequent to the emergency. Any misuse of the emergency contracting procedure may result in personal liability for the Colorado Department of Transportation (CDOT) employee who directs a Contractor to complete unauthorized work.

1.03 Project Scope, Schedule and Budget

Project Managers (PM's) will maintain the project scope, schedule, and budget within PMWeb. The planning level information is needed to create estimates for the total cost of a project for implementation into the Statewide Transportation Improvement Program (STIP). The scope, schedule and budget should be updated within PMWeb at a minimum after the Design Scoping Review (DSR) meeting, Field Inspection Review (FIR) meeting, Final Office Review (FOR) meeting, and the Engineer's final estimate for bid.

1.03.01 Project Creation via Systems, Applications and Products in Data Processing (SAP) and PMWeb

1.03.01.01 Office of Financial Management and Budget (OFMB) and SAP Project Creation

Project creation is required in SAP and PMWeb. See below for who completes each required step. Projects require a large amount of descriptive information including brief descriptions of the work being performed and geographic information, routes, mile points and structure information.

Please use the OFMB CJ20N Supplemental Guidance.doc for help setting up projects in SAP CJ20N.

SAP Steps for new projects (click on link below to go to work instructions).

Project Creation ZJ08 Work Instructions

1.03.01.02 Projects set up in PMWeb

To initiate PMWeb project set up, contact your region Program Reporting Transparency Office (PRTO) representative after the project has been set up in SAP CJ20N.

1.03.01.03 Description of Procedure for Project Creation

After a project has been identified as a need (likely from a planning list) and is part of the current Statewide Transportation Improvement Plan (STIP), it should be set up in Systems, Applications and Products in Data Processing (SAP). Although one project usually covers all phases, sometimes it becomes necessary to create multiple projects under one STIP number.

The following definitions will help determine what types of projects you are working on and how to get them set up in SAP and PMWeb.

Companion Project: a group of projects related to each other but having individual Project Control Numbers (PCN's) and advertised separately. This could mean a design project that goes to construction using multiple PCN's. This could also be multiple phases of an alternative delivery project. The "primary" project is often the design project or the project that is expected to be open the longest. Companion projects have common begin and end dates, but have unique advertisement dates and scopes from other companion projects.

Combo Project: a set or group of projects that will be advertised together but have different funding sources and individual PCN's. An example would be a Bridge Enterprise (BE) project advertised with another project. The "primary" project is usually the project with the largest funding package. Combo projects also have common project deliverables, scopes and other project details.

- When entering into PMWeb maintain the project delivery plan and deliverables in the primary project.
- All projects will need to have a scope, the construction task dates, an estimate and forecast entered into PMWeb.

Related projects: a set of projects that are not advertised together and not necessarily connected financially with other projects, but it may be beneficial for Colorado Department of Transportation (CDOT) to package information together. Some examples are Safer Main Streets, Vision Zero.

The Project Manager (PM) begins the process in SAP with Transaction Code ZJ08. ZJ08 starts a workflow that is routed to the Office of Financial Management and Budget (OFMB), the person who initiates ZJ08, and the Region Business Office. See the online SAP work instructions for more details on project creation steps and information required in SAP. Checklists provided in SAP training website show the participants and order for the SAP workflow.

Project Description (Name) – ZJ08

Please refer to the naming convention guidance below:

Universal Naming Convention Guidelines:

> This document will provide guidance and walk users through the naming convention for the Statewide Transportation Improvement Plan (STIP), Metropolitan Planning Organization (MPO) Transportation Improvement Programs (TIP's) and Colorado Department of Transportation (CDOT) Engineering projects.

CDOT has undertaken the task to achieve a naming consistency between the STIP, the MPO TIP's, and CDOT engineering projects. The ultimate goal is to allow recognition of CDOT projects regardless of which document is used.

In general, the primary name of the project should be recognized in all three types of documents. For example, everyone recognizes Central 70, I25 North, or the I25 South Gap projects. Examples of smaller projects include US 550 Ouray to Ridgway, or US 6 Clifton to Palisade.

Engineering projects ultimately become subprojects to this main project by the nature of the individual project. This would include phases of a project, various locations for the main project, and so forth.

Given the various system requirements between each organization and within Systems, Applications and Products in Data Processing (SAP), the following is offered as guidance for filling out the information needed in **ZJ08 in SAP**.

Project Description – 40 Character Limit
This should be used as a main identifier for a project. This is the name that should be consistent with the STIP and TIP's.

Geographic Location – 60 Character Limit
Location information including place names and mileposts should be included here.

Proposal Of Work – 70 Character Limit
This can include phase information, type of work, and so forth.

See illustration of how the information is concatenated for submission to the Federal Highway Administration (FHWA):

Submission to the FHWA.pdf

Abbreviations, Acronyms, And Common Notations:

New guidelines provided for Americans With Disabilities Act (ADA) compliance limits the use of some abbreviations commonly used by Colorado Department of Transportation (CDOT). The Federal Highway Administration (FHWA) prefers no abbreviations in the information submitted to them for project authorization or obligation. However, there are certain place name abbreviations that can still be used. For highway designations, it is recommended that hyphens not be used as a character-saving measure. For example, use Colorado (CO) CO 83, not CO-83. Use Interstate (I) I70, not I-70. See the table below:

Table 1.03.01 Examples of Abbreviations

Term	Abbreviation
Colorado	CO
County Road	CR
Interstate	I
Milepost	MP
Phase	PH
Road	RD
State Highway	CO
Street	ST
United States (US) Highway	US

Project Designators (General Location) – ZJ08:

The project designators are the general location of the project which is used to generate the project number. If you choose a highway segment, then the system will then generate a

number after that highway segment in sequential order. An example project number 0504-055 is on Highway 50 segment 4 (between La Junta and Kansas) and is the fifty-fifth project on this segment.

Project Prefix:

The business manager will designate the project prefix to be used on the project during this process. It will depend on the primary scope, location and funding for the project. For example, IM for an Interstate Maintenance project, FBR for a Faster Bridge project, NH for a National Highway. Please refer to The Crosswalk spreadsheet Updated 06/2023 for selecting the correct prefix.

Other Project Creation Information:

1. Region Code: Select the region overseeing the project. For projects not created in the region, select ST. Do not select HQ. For Bridge Enterprise (BE) projects use the region the project is located in.
2. Advertised By:

   L Local – This is a project that is advertised by a local agency (not Colorado Department of Transportation (CDOT)). If None is chosen above, a reason must be given from the pull-down menu.

   N None – The project is design only or a study and will not go to Ad. Combo projects may also use this designation for one of the projects.

   S State – This is a project advertised by CDOT and will go to Ad. If you choose this option, the Business Manager (BM) must enter an Ad date into Systems, Applications and Products in Data Processing (SAP).

   Z Shelf – Choose this option for a project that will be worked on in advance of funding for construction being identified. The Project Manager (PM) must also choose a Shelf level from the drop down menu. The BM will enter a Shelf date in the BM Tab.

   See Project Manager Shelf Level.pdf
3. State and Federal Improvement Codes: These attributes describe the fundamental purposes or activity of that project. The list of eligible activities is exhaustive. For more information or assistance in identifying the proper selection, contact the Office of Financial Management and Budget (OFMB).
4. Construction Engineering by:

C – Consultant/Contractor: This is a unique situation. Use only if requested by the Resident Engineer.

L – Local: Construction oversight by local agency.

O – Other: Use only if requested by the Resident Engineer.

S – State: This is standard for Colorado Department of Transportation (CDOT) projects.

X – For conversion purposes. Do not select.

5. Geographic Location, Terrain Type, Proposal of Work.
6. Project Personnel:
    a. This information is key if someone needs to contact the appropriate party during any part of the project development process.
    b. The people entered are tied to their organization code and are what is used when Systems, Applications and Products in Data Processing (SAP) sends workflows for key processes in the project development.
    c. The organization codes associated with the project personnel need to be correct; and if there is more than one organization involved in the project there is an alternate Org code.
    d. The Business Office also enters in Cost Center codes for the project which should correspond to the Residency responsible for the project. This may need to be modified if the Residency responsible for design varies from the Residency responsible for construction.
7. On System or Off System: If it is on a state highway, then it is On System. If it is on a city or county road or not on a highway, then it is Off System.
8. Project Delivery Method: Utilize the drop down menu to select the Project Delivery Method (sometimes referred to as the Contracting Method).
9. Planned Length and Planned Unit: Are not tied to the information given in the Online Transportation Information System (OTIS) at this time. Make sure the Planned Length entered matches the mileposts in OTIS. This information goes into the Form 463 Design Data.
10. Procurement Methods:
11. Location Details:

a. Follow the Systems, Applications and Products in Data Processing (SAP) work instructions to complete Geographic Information System (GIS) (Esri), Data in Project Manager (PM) Tab.

b. Route, beginning and ending reference points, lane quantity, facility type, functional type, and population. The Division of Transportation. Development (DTD) has this information for highways on Colorado Department of Transportation's (CDOT's) Intranet in Data Access – Transportation Data Set and Online Transportation Information System (OTIS).

c. Systems, Applications and Products in Data Processing (SAP) will carry the project location information to other forms such as the Form 463, Fiscal Management Information System (FMIS), ProjectWise project description, and ZJ40 Project Tracker.

12. Railroad Designator Code: If there are railroads near the project, use the pull-down menus to select which ones may be involved.

13. County Details, Congressional Districts, Structure Identification (ID) Details, Metropolitan Planning Organizations (MPO's), Transportation Planning Regions (TPR's), and Commission Districts and information:

    Must press "Calculate County Percentages" and "Calculate Congressional District Percentage" buttons. This information is calculated automatically based on the project limits entered in OTIS.

Advertisement Dates:

The Advertisement Date is the milestone where construction funds are authorized and obligated for the project. This date also serves as the commencement of the period when a project is open for job showings and acceptance of bid proposals.

The future bidding opportunities webpage:
See Scheduled Bid Openings on BidExpress.

The bid advertisement webpage:
See Bid Advertisement Calendar on Current & Future Bidding Opportunities.

CDOT recognizes three types of Advertisement, or Ad, dates, for use in project schedules. These Ad dates are recognized in CDOT's business application system, SAP:

1. Initial Planned Ad date: Ideally this is the Ad date that each region puts forth before July 1 of every year for the upcoming fiscal year's projects going to bid or when the project is created. This date is entered into SAP by the region business manager.

2. Current Planned Ad date: This is the Ad date which is current and officially agreed to by the Region Transportation Director (RTD). The Current Planned Ad date will match the Initial Planned Ad date until such time during the course of the fiscal year that the Region Transportation Director (RTD) has concurred with the necessity to change. Changes to the Current Planned Ad date are entered into Systems, Applications and Products in Data Processing (SAP) by the region business manager.
3. Business Manager Scheduled Ad date: This is the date that will be displayed in the Go Sheet and is a working Ad date generated by the Resident Engineer based on the most current scheduling information. This Ad date primarily serves as a barometer of progress in the total project. When indicated by a Scheduled Ad date which exceeds the Current Planned Ad date, the Resident Engineer will conduct a further assessment of the project and give consideration to a revision to the Current Planned Ad date (including consulting with the appropriate region and project personnel).

The Project Manager (PM) should review CJ20N in SAP after the project is created to be sure all the data is accurate and inform the Business Office of any revisions.

After the project is created in SAP, an email message will be sent to key region personnel involved indicating the process is complete and show the project information including the 5-digit project code.

The PM needs to add a template to the project before funds can be added to the project in SAP. See the SAP training internal website for work instructions on adding a template to a project. A project cannot be seen in ZJ40 until the template is added.

1.03.02 Project PreScoping and Scoping

1.03.02.01 Scoping a Project

Planned projects are most often identified through an asset management list or a planning list as a need. An initial construction budget is identified at the planning stage, prior to the project being transmitted to a residency for preconstruction delivery. The scoping process will consider the required specialty unit coordination items, overall design complexity, project limits, timeline for milestones, opportunities for added value, and anticipated risks throughout the preconst-tion and construction phases. The PM will work closely with the specialty group leads, maintenance section, and the construction Project Engineer to develop a detailed Scope of Work (SOW) for the design of the project. Any project assumptions made while developing the scope should be documented. Scope and limits will typically be adjusted based on funds allocated to projects.

The scoping process will also identify opportunities to include other asset project needs into the project scope to take advantage of geographic similarity and to potentially save on mobilization costs and traffic control during construction. As one example, a surface treatment project may also include major asset work such as a bridge deck rehabilitation or bridge replacement, if such work makes sense to complete as a single effort. For this reason a prescoping meeting is often advisable, ideally held prior to the design phase budget of the project being finalized. In this way, substantial adjustments to the project scope may be made as early as possible into the preconstruction process; so that level of effort, project schedule and construction budget may be right-sized heading into the scoping meeting.

The need for preconstruction consultant services is best identified at the prescoping stage, based on internal Colorado Department of Transportation (CDOT) staff availability and any specialized design services that may be necessary. This is discussed in more detail below.

Project Delivery Plan:

The preconstruction Project Manager (PM), in consultation with their Resident Engineer, is responsible for the assemblage and distribution of the project delivery plan via PMWeb. The project delivery plan consists of the following elements:

1. Project Scope
2. Staff Roles and Responsibilities
3. Schedule
4. Deliverables within Stage Gates
5. Estimate Capture
6. Risks
7. Procurement Plan
8. Communication Plan

The project delivery plan should be predicated by individual communications between the PM and CDOT specialty leads, as early in the prescoping/scoping process as practicable. It serves as a record of the understanding of the scope and schedule of the design effort to facilitate accountability for all team members. Moreover, the distribution of the project delivery plan gives each internal CDOT partner the ability to outline their understanding of the project risks and opportunities. Finally, the conversations surrounding the project delivery plan are a great opportunity to identify any outside consultant needs.

Additional Resources:

The Project Delivery Plan in PMWeb

1.03.02.02 Independent Work Hour Estimate (WHE)

An independently created WHE is required for every Colorado Department of Transportation (CDOT) design project. This requirement holds regardless of the labor being performed by internal CDOT staff, external consultants, or a combination of the two labor sources. On projects with consultant contracts, the WHE along with the Scope of Work (SOW) and documented assumptions shall serve as the basis for the negotiation of the work hours agreed to with the consulting firm(s).

The principal goal of the preconstruction WHE is to attach hours per major task and specialty to the preconstruction process, as well as to arrive at a first estimate of preconstruction funding needed for the design phase. A strong WHE lends significant credibility to the project development process, and it demonstrates that the Project Manager (PM) and the project team have thought through the necessary staff and financial resources to successfully deliver the design for advertisement and construction. Furthermore, the WHE process facilitates the important conversations between the PM and the specialty units as the anticipated work hours and tasks are refined.

As consultant needs are identified by the team members, the SOW and major tasks contained in the WHE will be utilized to solicit those consultant services. CDOT expects that the consulting firm(s) will come to the table with their own WHE, based on their expertise and their understanding of the SOW as presented. The PM, in consultation with their Resident Engineer (RE) and applicable specialty lead(s), will then enter into negotiations with the awarded consultant team to arrive at the final, negotiated work hours and estimated cost for design services.

1.03.02.03 Requirements and Guidance for Independent Cost Estimates (ICE's)

The Project Engineer will develop a preliminary ICE for the project, including estimates for each phase of the project (right of way, utilities, design, environmental, miscellaneous and construction). The RE/PM should consider the phase and respective personnel resources (in-house or consultant), and take advantage of the completed WHE and final negotiated hours/costs with the consultants, if needed. The phased estimates will include any respective consultant services for the project.

The Project Engineer and Resident Engineer will review the ICE with the Program Engineer and make revisions, where appropriate. Any revisions made to the cost estimate must be reviewed with affected specialty units before finalizing.

The governing assumptions behind the Work Hour Estimate (WHE) and Independent Cost Estimate (ICE) should be part of the Project Development Plan (PDP) as these products are finalized. Significant adjustments to the Scope of Work (SOW) later in the preconstruction process may necessitate a revisiting of the PDP and those governing assumptions.

1.03.02.04 Resources for Developing a WHE/ICE

A Work Hour Estimation Tool has been developed by Colorado Department of Transportation's (CDOT's) Program Reporting Transparency Office, and has the ability to produce a draft and/or final ICE.

Additionally, the trainings listed below may be found in SOCLearns:

- Work Hour Estimation Process
- Work Hour Estimation: Scope of Work
- Professional Service Contracting with Task Orders
- Negotiation Fundamentals

1.03.02.05 Project Delivery Plan in PMWeb

Prior to the adoption of PMWeb, the CDOT Form 1048 Project Scoping/Clearance Record was utilized as a scoping-level design checklist. This form is now superseded by the project delivery plan within PMWeb, the components of which may serve as a useful agenda outline for a prescoping or scoping meeting for the project.

Project Managers (PM's) may also use the Stage Gates/Deliverables functionality within PMWeb to manage key project work products or deliverables. These deliverables may include those identified within in the original Form 1048 along with any additional deliverables the PM desires to track during the life of the project. The Stage Gates/Deliverables functionality allows project stakeholders to:

- Identify key project deliverables that will be managed during the life of the project.
- Assign owners or those responsible for the identified deliverables.
- Associate deliverables with tasks in the project schedule to establish completion timeframes for each deliverable.
- Allow deliverable owners to input planned completion dates to help Project Managers (PM's) manage their schedules/figure out where conversations may need to happen to keep things on track.

Expected use of Stage Gates/Deliverables functionality varies by region. Users should reach out to their regional Program Reporting Transparency Office (PRTO) representative for any clarification around regional use of Stage Gates/Deliverables functionality.

1.03.02.06 Project Estimate

The project estimate is the summary of total costs for a project for all phases of project delivery. The costs are broken out into phases identified as Right of Way (ROW), Utilities, Design, Environmental and Miscellaneous (RUDEM). Additionally, the project estimate will include projected costs for construction of the project and the Construction Engineering (CE) and indirect costs. The ROW and utility phases may not be able to be estimated until after the Field Inspection Review (FIR) Plan level.

Likely, the project will have a construction project budget already identified from the planning process. This is known as the “planning level estimate”. The planning level estimate is the total cost allocated to deliver the entire project, not just the construction phase.

Table 1.03.02 Example Project Planning Budget $8,000,000

Phase	Planned Amount
ROW	$500,000.00
Utilities	$10,000.00
Design	$250,000.00
Environmental	$20,000.00
Miscellaneous	$ -
Construction Contract	$5,995,605.00
CE Base Rate 1.75%	$104,923.09
CE DTP charges	$400,000.00
Indirect rate 12%	$719,472.60
Total	$8,000,000.69

This planning level estimate is utilized until the preconstruction project development process has progressed to be able to assign pay items and quantities. No later than the Final Office Review (FOR) the pay items and quantities should be entered into AASHTOWare to develop the project estimate. Project estimates of construction costs should be adjusted as the scope is refined, as staffing costs are determined, and as project design progresses. The Project Manager (PM) should work with the Engineering Estimates & Market Analysis (EEMA) team beginning no later than the FOR to refine the construction project estimate.

Project estimates should be recorded in a PMWeb Estimate Capture record at each major milestone or if the scope is changed significantly.

Additional Resources:

Project Cost Planner Tool can be used to develop planning level estimates through the Field Inspection Review (FIR) level estimate.

Creating an Estimate Capture Record Estimate Captures in PMWeb.

Engineering Estimates & Market Analysis to request a construction project estimate.

Business Center Engineering Estimates & Market Analysis has Cost Data Book, Item Code Book, and Construction Cost Index Data.

Estimate Review by Engineering Estimates and Market Analysis (In “Section 2.27” of this manual).

1.03.02.07 Construction Engineering (CE) and Indirects:

Below is an example of how to include CE and indirect charges in the total construction project cost:

Construction contract: $2,000,000

1.75 percent CE base rate: $35,000

Consultant: $100,000

Colorado Department of Transportation (CDOT) staff: $50,000

Total before indirects: $2,185,000

Indirects (12 percent): $262,200

Total budget needed: $2,447,200

Additional Resources:

Cost Allocation Plan | ICAP Annual Renewal Packet and Rate Sheet

1.03.03 Budgeting at the Project Scale

1.03.03.01 Budgeting Basics

Before any phases of a project can be budgeted, a scope, and project estimate (phased, as appropriate) are required. This assures that the Resident Engineer, specialty units, region Business Office and region management all have the same understanding of the project scope and the anticipated costs to move the project through the project development process. Prior to a project being budgeted, project staff can charge their time to their home cost center utilizing function code 1150.

1.03.03.02 Budgeting

Once a template is added to the project in Systems, Applications and Products in Data Processing (SAP), the Project Manager (PM) can notify the Business Office that the project is ready to be budgeted. See “Section 1.04” for estimations for the preconstruction phases for a project.

1.03.03.03 Background

Federal-aid highway funds are authorized by Congress to assist the states. They provide for the construction, reconstruction, and improvement of highways and bridges on eligible federal-aid highway routes and for other special purpose programs and projects.

Projects utilizing federal funds must meet specific federal program requirements, at present, Colorado Department of Transportation (CDOT) requires all highway projects it constructs to conform to the federal standards. Doing so ensures consistency and allows for the possibility of adding federal funds to a project that initially, is funded without any federal funds. Federal funds are made available to the department for expenditure on highway related construction projects. Routine highway maintenance activities such as snow removal or filling potholes do not meet these criteria.

1.03.03.04 Definitions

NCAT: NCAT, as noted in SAP, prevents time/labor charges from hitting the phase, at timesheet entry. The region Business Office will need to unset Ncat to allow payroll charges after federal authorization is given. The region Business Office should be notified if the Resident Engineer wants to allow payroll charges. Some projects do not want payroll charges to a particular phase.

NOPT: NOPT (No postings) as noted in SAP stops all financial postings to the project. Nothing can be charged to this phase including purchase requisitions or direct charges.

Encumbrance: An encumbrance is a binding obligation to pay.

Preconstruction phase encumbrances are generally for Right of Way (ROW) acquisition, utility agreements, and consultant task orders.

Construction phase encumbrances are for the contract with the Contractor, Construction Engineering (CE) and indirects costs calculated for the project.

Intergovernmental Agreements (IGA's) encumber funds for all phases for the local agency on local agency projects.

1.03.03.05 Authorization, Advance Construction, and Obligation

Authorization is when the Office of Financial Management and Budget (OFMB) sends the budget action to the Federal Highway Administration (FHWA) and they formally approve the start of the project. It ensures that FHWA has agreed that the Colorado Department of Transportation (CDOT) can spend the funds identified for the project. Charges cannot be made against a phase until the funds are authorized. It is further important to note that if federal aid is requested, state authorization is not initiated and not authorized until the federal authorization is received. Work performed on unauthorized projects is not legitimate and could become the personal liability of the individual authorizing such work. The budget will sit in "advance construction" until expenditures occur.

Advance Construction (AC) allows states to begin a project even in the absence of sufficient federal-aid obligation authority to cover the federal share of project costs. It is codified in Title 23, Section 115. AC eliminates the need to set aside full obligational authority before starting projects. As a result, a state can undertake a greater number of concurrent projects than would otherwise be possible. In addition, AC helps facilitate construction of large projects, while maintaining obligational authority for smaller ones. At some future date when the state does have sufficient obligation authority, it may convert an advance-constructed project to a federal-aid project by obligating the permissible share of its federal-aid funds and receiving subsequent reimbursements. Advance construction allows a state to conserve obligation authority and maintain flexibility in its transportation funding program.

Obligation is a formal commitment by FHWA to reimburse participating costs on a project. This allows CDOT to bill for these eligible activities. It draws down the state's balance of both apportionment and obligation ledgers. CDOT is limited in total to the "obligation limitation".

Procedure to budget funds: The initiating region must ensure that the project is properly listed in the Statewide Transportation Improvement Plan (STIP) and within the fiscal constraints imposed by the STIP. Each project budget action is individually processed and verified against its approved STIP line item. Each project is budgeted by phase

(Right of Way (ROW), utility, design, environmental, construction, miscellaneous) and provider (federal, state, or other (local)).

Identify the sources of funding for the project: For federal funds there are subcategories that have to match the characteristics of the project such as interstate maintenance and bridge-on system. The Office of Financial Management and Budget (OFMB) reviews the annual federal appropriation bill by category, comparing the appropriations with the authorizations calculating the percentage obligation limits for Colorado by program. Based upon these calculations, Colorado Department of Transportation (CDOT) regions and the Metropolitan Planning Organizations (MPO's) are allotted funds to spend on actual projects by subcategory. It is from these allotted funds or additional funding provided by a local government that a project receives obligated funding.

The regional Business Offices must ensure that the project funds from the various federal categories, as well as state or local, or both highway funds, are applied in a suitable mix based on estimates from the Project Manager (PM).

Funds to be budgeted must be in the current year's Statewide Transportation Improvement Plan (STIP). The business manager will determine whether or not the project's budget requires Transportation Commission (TC) action by referencing the e-February 2023 TC – PD 703.0 Matrix – FINAL.xls.

All budget actions are processed daily and, if commission action is required, immediately scheduled for the next budget supplement submission to the TC. The cutoff for budget actions inclusion in a supplement is one week preceding the TC scheduled Meeting. These Budget Actions will remain in a pre-posted status until the commission's approval of the Budget Supplement.

After verifying the overall project description, including location and work type with the requested funding and ensuring each budget action is linked to a viable STIP number, OFMB applies first and second level approvals to the budget action and determines the budget document type.

OFMB enters the approved budget request into the Systems, Applications and Products in Data Processing (SAP) system which automatically generates the corresponding requests for phase authorization/obligation.

- **Non-federal-aid phases** are authorized and obligated immediately upon budget action approval in SAP.
- **Federal-aid phase** authorizations requests are submitted daily for review and approval by Federal Highway Administration (FHWA) Colorado Division via the outbound FHWA Fiscal Management Information System (FMIS). The approved

federal authorization is received from the Federal Highway Administration (FHWA) via the inbound Fiscal Management Information System (FMIS) interface.

The process of requesting federal-aid authorization is differentiated by nonconstruction and construction phases of work:

1. Preconstruction:

   For the preconstruction phases of a federal-aid project, Office of Financial Management and Budget's (OFMB's) final approval of a budget action in Systems, Applications and Products in Data Processing (SAP) prompts a request to FHWA for federal authorization/obligation via the outbound FMIS interface. Once authorization is granted by FHWA and recorded in FMIS, the FHWA phase authorization date(s) is auto-populated in SAP via the inbound FMIS interface.

   The Right of Way (ROW) phase requires no further budgetary action by the region. Actual acquisition, however, must be authorized by ROW staff upon completion and approval of the ROW Plans. ROW staff will notify the region, via Form 462a Right of Way Plan Approval that ROW acquisition may occur.

   The utility phase requires no further budgetary action by the region, but the region must also submit utility agreements to the Utility Engineer for processing.

   The design, environmental and miscellaneous phase requires no further budgetary action by the region.

   Note: project phases are automatically set to NCAT or NOPT in SAP (see definitions above) when created. The Project Manager (PM) will notify the Business Office if they want payroll charges or other charges to be allowed to the preconstruction phases after budgeting and obligation are complete.

2. For the construction phase budgeting of a federal-aid construction project (In "Section 2.30" of this manual).

3. Budgeting Timing Before Authorization:

   Budgeting construction funds is usually in advance of the authorization process. Budgeting construction funds can occur when the current Statewide Transportation Improvement Plan (STIP) year begins for the construction phase designated or when the funds are completed in the STIP process. If additional funds for Construction are required, the budgeting request may initiate the change in the STIP process. Construction budget requests should be submitted to the region Business Office no later than 45 days prior to the Ad date.

4. Authorization: See Plans, Specifications and Estimate Approval (FORM 1180) (in "Section 2.30" of this manual) for construction funds obligation process.

1.03.03.06 Budgeting Phases

Budgeting is done by project phases. Guidance as to what charges should be considered in these phases are as follows. These are identified in Systems, Applications and Products in Data Processing (SAP) by the Work Breakdown Structure (WBS) elements which are designated below as the project 5-digit code shown as XXXXX and then the WBS coding. All project estimates submitted must be within 10 percent of the corresponding budget action.

Right of Way (ROW) (Work Breakdown Structure (WBS) – XXXXX.10.10):

This may not be part of the initial budget until the project is further into the process such as at the field inspection review meeting when the amount of ROW can be determined.

ROW costs include the cost of property acquisition, access control, and easements. Also included is the cost of contingencies (salaries, contracts, potential litigation, and miscellaneous expenses) associated with the acquisitions and relocations.

Colorado Department of Transportation (CDOT) staff charges or consultant task order charges are generally not included in this phase but are accounted for in the design phase of the project. If the design phase is closed and there is still ROW work being completed, then this phase will need to take into account charges needed to do the work.

Prior to the Right of Way Plan Review (ROWPR) meeting, all Survey/ROW staff time and consultant charges related to survey or ROW plans shall be charged to the D-phase of the specific project using the functional area code for Survey or ROW. Once the ROWPR meeting has been conducted and acquisition needs have been identified, staff time for ROW appraisal and acquisition relocation shall be determined and budgeted to the R-phase of the project.

For alternative delivery (Design Build or Construction Manager/General Contractor (CMGC)) projects or more complex ROW acquisitions, the R-phase may need to be budgeted with preliminary funding to allow for ROW staff to charge time to conduct meetings with landowners, or to allow for setting up vendor task orders for early appraisals to expedite acquisition post ROWPR. After the ROWPR is completed, the R-phase budget will be increased based on the ROWPR estimate of costs.

Project monumentation charges shall be direct-to-project prior to final project closeout and initiation of the Form 950M Project Final Data/Project Closure request. Contact your Business Office in the event there are costs incurred after a project has been closed to allow charging to the Construction Engineering (CE) Cost Center and Work Breakdown Structure (WBS) –

XXXXX.20.20). The requirement is to complete the monumentation within one year of final acceptance to meet the project closure requirements.

Utilities (wbs – XXXXX.10.20):

This may not be part of the initial budget until the project is further into the process such as at the field inspection review meeting when utilities can be identified.

The U-phase is intended only for actual costs of relocating utilities and shall not include any time charges. Utility costs include the cost for removals, installations, modifications, and relocation of utilities required to construct a project, including the associated design and agreement processing. The cost may be partially or fully the responsibility of the utility owner, depending on the type of project funding, utility company, right of way occupancy held, and local agency-utility arrangement (See “Section 7 Right of Way (ROW) and Utilities”).

Railroad agreements will be funded under the utility phase of a project.

Research, correspondence, and negotiations with irrigation companies, ditch riders, and associated parties are often accomplished via the Utilities Unit, and negotiated settlements with irrigation companies or end users or both may be funded within the utilities phase of the project. Colorado Department of Transportation (CDOT) staff or consultant task order charges are generally not included in this phase but are accounted for in the design phase of the project. If the design phase is closed and there is still utility work being completed, then this phase will need to take into account charges needed to do the work. It is not unusual for the utility phase to remain open as the project moves into construction as utility relocations are completed and terms outlined in standard utility agreements are fulfilled.

Design (WBS – XXXXX.10.30):

Design costs include survey, design, and other engineering work required to develop a complete set of project plans and specifications. For consultant-designed projects, the cost of these professional services needs to be included.

The Work Hour Estimate (WHE) and Independent Cost Estimate (ICE) should be submitted to the Business Office when requesting the funds for this phase.

When estimating this phase, the current indirect rate needs to be taken into account and applied to CDOT staff salary with benefits and consultant task orders.

All design functions including most specialty groups that work on projects shall charge staff time to the D-phase and use the applicable functional area code. The specialty groups that shall charge time to the D-phase may include but are not limited to Staff Bridge, Traffic, Environmental, Utilities, Hydraulics, Right of Way (ROW), Intelligent Transportation System

(ITS) and Survey. If your specialty does not have a specific functional area code such as the Business Office or Equal Employment Opportunity (EEO)/Region Civil Rights Support, then functional area 1720 shall be used for timesheet coding.

Hours worked related to construction after a project is advertised shall be charged direct-to-project to the project's C-phase Work Breakdown Structure (WBS) – XXXXX.20.10) using the applicable functional area code. Once a project has proceeded to advertisement the Business Office will open the construction (WBS – XXXXX.20.10) for direct-to-project charges to allow staff time charges and lock the D-phase WBS to prevent staff time charges to the D-phase. In instances where charges to the D-phase will continue after the project has been awarded, or in the case of an unsuccessful bid process, the Project Manager (PM) may request that the business office unlock the D-phase with Program Engineer approval.

For local agency projects, all local agency costs (both preconstruction and construction costs) shall be coded to the indirect cost center using the local agency functional area code, 1340. This functional area code should be used when any time is spent working on local agency project delivery so that the Colorado Department of Transportation (CDOT) can get an accurate accounting of costs to deliver the local agency program. Construction Engineering (CE) cost centers shall not be used for local agency construction costs.

Environmental:

All environmental work specific to projects, including all National Environmental Policy Act (NEPA) activities, shall be charged direct-to-project. Consultant task orders and CDOT staff time charges for work related to categorical exclusions shall be charged to the D-phase (WBS – XXXXX.10.30) using the environmental functional area code.

CDOT staff time charges for work related to Environmental Assessments (EA's) or Environmental Impact Statements (EIS's) shall be budgeted and charged to the E-phase (WBS – XXXXX.10.40). This is because an EA or Environmental Impact Statement (EIS) is a bigger and more time-consuming process that is beyond a Categorical Exclusion (CATEX) provided for normal program delivery.

If there are environmental charges for inspections or other environmental related activities during construction, those charges will be charged direct-to-project C-phase (WBS – XXXXX.20.10). Environmental activities post construction will be charged to the home cost center using the environmental functional area code.

Miscellaneous (WBS – XXXXX.10.50):

The M-phase shall be used to charge staff time for activities related to a study or grant writing. Examples can include a Planning and Environmental Linkage (PEL) that does not result in an

environmental clearance, or any other type of study that is not immediately anticipated to result in specific design or construction activities. For example, a corridor freight study, safety study, or intersection study, and so forth.

Construction (WBS – XXXXX.20.10):

Construction estimates should include the cost of the bid items, CDOT staff cost, consultant task order costs for Construction Engineering (CE) and post-design construction services, and the current base CE and indirect rates. If design services will be required during construction those costs must be included in the CE direct-to-project estimate.

The following CE costs shall be charged to the C-phase of a project:

- Costs associated with delivery and support of projects under construction
- Consultant CE task orders
- Reproduction costs
- Advertising cost for Notice of Final Settlement Environmental Inspections or other environmental related activities during construction

The following subclassifications of CE costs are to be charged direct-to-project (WBS – XXXXX.20.10) using the applicable functional area code:

- Any hours worked related to the construction project after a project is funded, authorized by the Federal Highway Administration (FHWA) if applicable, and advertised to allow for time charges related to project showings and mandatory prebid meetings, as well as any coordination with construction management consultants prior to bid opening and award.
- Field Engineering and Inspection: Colorado Department of Transportation (CDOT) staff time, expenses, materials, supplies, per diem and lodging, and other costs incurred for work performed on the job site or at the plant by the Resident Engineer and other staff assigned to the project. This includes staff work checking of evaluations, dimensions, and quantities, staking, computation of quantities and periodic reports.
- Consultant construction support task orders, including construction management, inspection, design under construction, or other applicable Construction Engineering (CE) related costs. Office Engineering: Salaries, salary additives, materials, supplies, and other costs incurred for work performed in checking shop drawings, checking pay items, making plan revisions, checking change orders, performing project reviews, authorizing contract payments and other district and central office efforts, including

that of clerical staff and Finals Administrators, relative to specific project determination.

- Construction Material Testing and Inspection: Colorado Department of Transportation (CDOT) staff time, expenses, materials, supplies, and other costs incurred in making tests and inspections of materials incorporated in highway construction projects.
- Environmental Support: CDOT staff time, expenses, materials, supplies, and other costs incurred for Inspections, monitoring, and mitigation oversight.
- Intelligent Transportation System (ITS) Support: CDOT staff time, expenses, materials, supplies, and other costs incurred for inspections, and testing and validation of ITS networks, systems, devices.

Construction Statistical (Work Breakdown Structure (WBS) – XXXXX.20.20:

Project monumentation charges shall be direct-to-project prior to final project closeout and initiation of the Form 950M Project Final Data/Project Closure request. Contact your Business Office in the event there are costs incurred after a project has been closed to allow charging to the Construction Engineering (CE) Cost Center and (WBS – XXXXX.20.20). The requirement is to complete the monumentation within one year of final acceptance to meet the project closure requirements.

PMWeb Forecasting at the Project Level

Project forecasting in PMWeb allows Project Managers (PM's) the ability to assign an overall cost estimate for their project along with establishing an estimate of how project costs will be distributed over time (formerly known as a drawdown). Forecasting in PMWeb is required given the data is used to manage and track CDOT's statewide program and cash balance.

Two records are used to complete a project forecast in PMWeb.

- The Estimate Capture Record should be completed first. This record is used to capture the construction estimate prior to award to provide the basis for construction contract forecast (drawdown) generation. Project Managers (PM's) can use tools such as the Project Cost Planner Tool, Phase Estimate Worksheets, Engineering Estimates & Market Analysis Unit (EEMA) Estimates, or other independent methods to determine the project estimate.
- The Forecast Record should be created following the entry of the estimate capture record. Forecast records (previously drawdowns) provide a monthly spread of estimated construction contract expenditures on projects. Accurate forecasts enable CDOT to more effectively plan to use cash and deliver more projects.

Forecast records require the following before being created:

1. A project schedule with the construction phase identified. The construction phase for a project is identified by selecting Construction from the dropdown menu in the Forecasts column in the project schedule for the schedule task used to identify the construction phase duration of the project. Making this Construction selection establishes the timeframe that will be used to generate the forecast.
2. A dollar value, which will be pulled from:

- The latest approved estimate capture record (see above). This dollar value is used for projects prior to the project being awarded.
- The construction contract, less expenditures (Systems, Applications and Products in Data Processing (SAP) Form 65 Project Financial Statement, line 7, Proj'd To Compl), once it is post-award.

Once the two requirements above have been met, the PM can create the forecast record in PMWeb. When creating the forecast record a “spend curve” will need to be identified. The spend curve determines how costs will be distributed throughout the construction phase of a project. The spend curve choices are:

- Back-loaded curves assume higher spending at the end of the date range.
- Front-loaded curves assume higher spending at the beginning of the date range.
- Bell curves assume higher spending in the middle of the date range.
- Linear curves assume consistent spending throughout date range.

Estimate capture or forecast, or both records will need to be updated throughout the life of the project. The estimate capture record should be updated any time the overall project cost changes. The forecast record should be updated anytime the construction schedule changes or there is a change to the cost curve, or both (how costs will be distributed during the construction phase).

Estimate capture and forecast record update requirements vary from region to region. At a minimum, these records should be revisited/updated at the following times during a project lifecycle:

1. Project Creation in Systems, Applications and Products in Data Processing (SAP)/PMWeb: A project's first estimate capture and forecast records should be entered in PMWeb when the project is created in SAP.

2. Field Inspection Review (FIR) Update: The estimate capture and forecast records should be updated at FIR after all FIR changes have been agreed to by project stakeholders.
3. Final Office Review (FOR) Update: The estimate capture and forecast records will be updated after all notes from the FOR meeting have been agreed to and the Engineering Estimates & Market Analysis Unit (EEMA) estimate has been incorporated.
4. Advertisement: Update the anticipated construction phase estimate (estimate capture record) and forecast (forecast record) before processing the Form 1180 Standards Certification and Project Plans, Specifications & Estimate Approval using the latest engineer's estimate (line 7, Project Commitment Amount, from Form 65 Project Financial Statement).
5. Decision to Award: The estimate capture and forecast record should be updated after the decision to award, utilizing actual bid costs.

Project Change Requests: A project's estimate capture and forecast records should be updated anytime a project scope, schedule or budget change, or both gets approved; if these changes will likely impact a project's total cost or how costs will be distributed across the project's construction phase, or both.

Monthly Construction Forecast Refreshes: Once a project enters the construction phase, the project's forecast record should be updated monthly, by the second Monday of the month. This enables more accurate statewide management of project costs (for example, management of actual costs versus estimates).

Detailed instructions for estimate capture and forecast record entry/updates can be found on the PMWeb site. Please reach out to your regional Program Reporting & Transparency Office (PRTO) representative with any questions around generating forecasts in PMWeb.

Additional Resources:

Creating an Estimate Record. See Estimate Captures in PMWeb.

Creating a Forecast Record. See Forecasts in PMWeb.

1.03.04 Developing the Project Schedule

1.03.04.01 Project Scheduling

Project Scheduling is the task of defining tasks, milestones and relationships between work activities. Tasks will have a duration, and milestones represent major achievements or decision points in a project. Milestones are a single day, they do not have a duration. Scheduling is an inexact process in that it tries to predict the delivery of the project using task durations and logical relationships. While it may not be possible to predict with exact certainty the duration or progression of a project, there are techniques and best practices that can increase the accuracy of an approximate timeline estimate. Project schedules are most effective when the project activities are well-defined and appropriately linked. Project schedules are not static; as projects progress, the Project Manager (PM) should update the schedule and task dependencies accordingly.

PM's must maintain a basic schedule in PMWeb for every project. The schedule should be developed using the region schedule template in PMWeb, but at a minimum will have the seven standard milestones.

The schedule will progress through project delivery and each version will be defined below:

Initial Schedule: The project schedule before the project team approves it during the Project Development Plan (PDP) approval process.

Working Schedule: The approved project schedule throughout delivery that will include a combination of planned and completed tasks.

Baseline Schedule: The approved project schedule recorded at the Field Inspection Review (FIR) or only modified using proper change control procedures for use in analysis and improvement of future project schedules. Project control procedures vary by region but should be completed using the PMWeb project changes record.

Additional Resources:

Project Changes Record in Project Changes in PMWeb

1.03.04.02 Initial Schedule

The PM will create an initial project schedule that identifies key project milestones and related activities. The purpose of this schedule is to identify:

1. And specify actual activities in the schedule to ensure adequate planning of the work has been achieved, as well as to permit accurate monitoring and evaluation of the project's progress. These activities may be identified during the prescoping phase of the project through the development and refinement of the Scope of Work (SOW) and Work Hour Estimate (WHE), as described above.
2. The need for Colorado Department of Transportation (CDOT) or consultant personnel resources, or both.
3. Activities that are critical in ensuring the timely achievement of project deadlines.
4. Associated dates with respect to the deliverables of other project specialty groups.
5. Deadlines from CDOT management or region work plans.
6. Critical processes such as the Statewide Transportation Improvement Plan (STIP)/Transportation Improvement Program (TIP)/Long Range Plan amendments and project budgeting.
7. Milestones to allow region management to easily track project progress.

As a minimum, project milestones for Design-Bid-Build (DBB) will include the following:

1. Design Scoping Review (DSR)
2. Field Inspection Review (FIR)
3. Final Office Review (FOR)
4. Advertisement Date
5. Late Ad
6. Begin Construction
7. End Construction

The Ad date can be replaced by a shelf date if the project does not have funding for construction.

Additional milestones may be added, as needed, based on the complexity of individual projects or for project re-advertisements. For projects involving consultants, the project schedule should include milestones and activities related to the contracting/task order process (Scope of Work (SOW), Statement of Interest (SOI), Request for Proposal (RFP), short list, interviews, consultant selection and a notice to proceed). Where applicable, the project schedule should also include appropriate milestones and activities related to the administration of Intergovernmental Agreements (IGA's). Different milestones should be considered for alternative delivery methods.

Table 1.03.04 Project Delivery Methods with Associated Project Milestones

Design-Bid-Build – milestones in order from top to bottom	Construction Manager/General Contractor (CMGC) – milestones in order from top to bottom	Design-Build – milestones in order from top to bottom
Scoping	Scoping	Scoping
Field Inspection Review (FIR)	FIR	SOI
Final Office Review (FOR)	FOR	Draft RFP
Ad	Ad/(Construction Agreed Price Proposal (CAPP)	Final RFP
Late Ad	Late Ad/CAPP	Late final RFP
. Begin construction	Begin construction	Begin construction
End construction	End construction	End construction

1.03.04.03 Setting the Late Ad Date

The late Ad date is an indicator of the latest possible date a project must go to advertisement to allow a project to meet important deadlines, regional goals, stakeholder commitments, build restrictions, or spending requirements. The late Ad date normally corresponds to the latest a project can go to Ad and still be delivered within the planned construction season.

Who do you consult with?

When setting your late Ad date you need to consult with your Program Engineer, Resident Engineer, regional business manager and region Program Reporting & Transparency Office (PRTO) representatives, and region asset managers.

What things do you need to consider?

Weather and seasonality: Is there a window of opportunity to build your project? Consider animal nesting or migration, stream flows and weather.

Funding restrictions: Does the money need to be encumbered by a specific time? Is there a must-spend-by date (for example Archaeological Resources Protection Act (ARPA) funds).

Events: Bike races, school year, harvest, holidays, tourist season, and so forth.

Special material needs and lead times.

Have you made any commitments to stakeholders where timing is involved?

Risks: Third party, such as railroad, utilities.

Other timing to consider when looking at project scheduling:

Project Managers (PM's) should plan to advertise their project a minimum of 2 months prior to the critical construction start date.

The following are average times to consider when scheduling a project and setting the Start Construction milestone:

- Ad 3 weeks
- Letting 1 week
- Award 1 month

The PM will develop an initial schedule with input from the Resident Engineer, specialty units and other team members. The schedule should be reviewed and endorsed through the Project Development Plan (PDP) process in PMWeb. The PM owns the preconstruction schedule but many tasks, their durations and relationships are defined by the specialty units that complete them**.**

The Colorado Department of Transportation (CDOT) specialty unit managers, or designees, will be invited by the PM for a design scoping review meeting but correspondence should precede this meeting for project schedule and work hour estimate input. For both in-house and consultant design projects, CDOT specialty unit managers, or designees, will participate in the scoping activities when the project involves their discipline or when requested by the PM. CDOT specialty unit managers will review the project in advance and prepare any information that may be needed for the scoping meeting, for example, the Structural Engineer would review and present existing bridge information on projects involving structures.

The entire project team including the Resident Engineer (RE), Colorado Department of Transportation (CDOT) specialty unit managers and other team members will review the initial project schedule on both in-house and consultant design projects, and recommend changes as needed to accommodate the project work activities identified for the subject discipline.

Team members may recommend additions to the minimum milestones as needed for the specific needs of the project. For example, on a retaining wall project that requires extensive geotechnical work that will be in the critical path, additional milestones pertaining to this work may be recommended. Another example would be adding a Right of Way Plan Review (ROWPR) meeting milestone for projects with Right of Way (ROW) as a critical path. The Project Manager (PM) should accommodate the specialty units when adding and monitoring milestones.

As mentioned above, the PM will provide the initial schedule and workhour estimate to all key specialties (Bridge, ROW, Environmental, Traffic, Materials) for final resolution of any potential conflicts of logic or deliverables through the Project Development Plan (PDP) endorsement process in PMWeb. After the schedule is endorsed, it will be referred to as the working project schedule. At the Field Inspection Review (FIR), the working project schedule will be baselined.

A step by step outline of the project schedule, policies surrounding the schedule and the PDP endorsement process can be found at the following links:

Outline of Project Schedule Project Schedule in PMWeb

Outline of Project Delivery Plan Project Delivery Plan in PMWeb

A schedule can be created and maintained in any file but many benefits result from not only having the milestone schedule within PMWeb but the detailed schedule. The benefits include availability to project team, relaying due dates from the schedule to the deliverables in Stage Gates and log of distribution or workflow approval.

The region management team (at a minimum, the Program Engineer, ROW manager and environmental manager and Resident Engineer) will review and approve the initial schedule, including milestone dates, critical path activities and specific deliverables. The Ad date reflected in the schedule will be addressed at this time and, if agreed to, will be accepted as the project initial planned Ad date for use in the project set-up.

Upon review by the region management team, the PM will make any necessary modifications to the initial schedule and preliminary workhour estimate. These modifications will be the last changes to either document. The PM will save and refer to these files as the initial project schedule and final workhour estimate.

1.03.04.04 Working Schedule

This project schedule details both planned and actual project activities, durations and resource allocations. This schedule is updated regularly by the Project Manager (PM) and reflects actual progress of work activities throughout the duration of the project. At any time, a comparison may be made between the working and baseline schedules to assess the progress of a project. The PM should perform a comparison, at least monthly, to assist with the identification and management of unanticipated obstacles, risks and opportunities.

A project schedule is prepared to monitor the progress of preconstruction activities and to determine the estimated date for the advertisement of the project. The PM should provide a copy of the working project schedule to all internal specialty units at every milestone meeting.

The working project schedule is managed by the PM and used to monitor important events and activities required to complete the design, right-of-way acquisition, environmental clearances, utility work, and other associated tasks required to finalize design of a project. The PM will monitor the schedule to ensure important dates are met to successfully progress the delivery and advertise the project.

The PM should give priority attention to all critical path tasks but extra attention should be given to tasks that often require considerable time such as right-of-way acquisition, complex bridge design, consultant selection, environmental investigations, local agency agreements, utility and railroad agreements, and hazardous materials mitigation.

A PMWeb schedule is required to monitor milestones and key tasks. A Microsoft Project Schedule (MS) can be used in addition to the PMWeb schedule if a PM is more comfortable with the scheduling tool but there are benefits to only maintaining a single schedule within PMWeb. These tools are used to establish a project schedule, critical path and milestones. Using PMWeb, the project team can coordinate assigned deliverables for each member that are assigned to schedule tasks and provide updated “due dates” corresponding with the linked schedule task.

The PM will manage the working project schedule and coordinate project progress with the project design team and all affected parties. The project team will be informed of activity schedule changes and accomplishments in order to coordinate plan development. Strategies should be developed for resolving critical path activity delays. The PM will inform affected parties of any changes to the schedule and adjustment to the advertisement date with the team Input functionality within a PMWeb Project Change Record. More information on this Project Change Record can be found at:

Project Changes in PMWeb.

1.03.04.05 Baseline Schedule

Within PMWeb, the baselined schedule is the project schedule agreed upon by all project team members at Field Inspection Review (FIR). This schedule is created to accurately compare the project delivery plan prior to starting work and the progressed schedule throughout delivery. The desire is to identify impacts, expose risks and make schedule adjustments for future projects that better align to the actual delivery. The baseline schedule should only be updated after the region change control approval has been obtained. Contact the Program Reporting & Transparency Office (PRTO) rep for specifics of statewide and regional guidance for changes to the baseline schedule. The majority of Colorado Department of Transportation (CDOT) projects do not meet the baseline change guidance and the baseline schedule remains unchanged throughout the duration of the project.

Developing and managing a project schedule includes the following activities:

1. Conduct the project design scoping before preliminary design by initiating a Design Scoping Review (DSR) – See "Section 1.02" and "Section 2.01".
2. Develop a proposed project schedule, preferably within 30 days after the DSR.
3. Coordinate, monitor and update the project schedule with other appropriate milestones such as request and receipt of the survey, FIR, Final Office Review (FOR), and advertisement date.
4. Update any changes to these dates in PMWeb.

If the Project Manager (PM) is also maintaining a schedule outside of PMWeb that schedule needs to be stored in a shared drive so all team members can view it. Any changes to the schedule should be communicated with all of the project team members.

Additional Resources:

See Controlling Our Critical Path.pdf guide on Other Design Documents | Safety Selection Guide.

1.04 Consultant Selection and Contracting Process

When the state does not have adequate resources (such as qualified personnel, adequate staff, specialized expertise, or ample time) to perform a task, consultant services are contracted. A professional consultant is a licensed Professional Engineer, licensed professional architect, licensed landscape architect, licensed industrial hygienist, or licensed surveyor. A qualified and experienced consultant in relation to the expected

Scope of Work (SOW) is obtained according to an approved selection process through the Engineering Contract Services Unit.

The method for obtaining a professional consultant to do a specific SOW or Non-Project Specific (NPS) consultant services shall comply with applicable federal and state laws governing the services of consultants, as outlined in the Colorado Department of Transportation (CDOT) Procedural Directive 400.1, Obtaining Professional Consultant Services, and 23 Code of Federal Regulations (CFR) Section 172, Administration of Engineering and Design Related Services.

The Engineering Contracts program manager is responsible for the prequalification and coordination in the selection of a consultant and developing a contract between the state and the selected consultant. The Engineering Contract Services Unit facilitates the selection process. The Resident Engineer shall evaluate the consultant's performance on projects.

1.04.01 Obtaining a Consultant Contract

CDOT's consultant selection process is not required for individual Project Managers (PM) to execute NPS or non-fund encumbering task orders. This is because a consultant selection process is followed to establish the master NPS contracts necessary for multiple NPS task orders to be written without individual consultant selection processes. To access a consultant via NPS:

- CDOT must have an active NPS contract with the consultant desired.
- The total value of services requested must be less than $500,000. Splitting up services for the same effort into smaller task orders is not permitted. Chief Engineer approval is required to request NPS services in excess of $500,000.
- The PM must request permission from the region NPS contract manager for approval to write a new NPS task order. This is typically done via email.
- The NPS consultant can provide this CDOT point of contact to the PM. The region NPS contract manager will need to know the value of the new task order requested so they can determine if there is enough funding left in the master contract to accommodate. The PM must be aware of the expiration date of the NPS master contract as this will limit the end date of any task order written under the NPS master contract.

The following steps are necessary to obtain an executed project specific consultant contract. The Engineering Contract Services Unit shall perform the steps unless otherwise noted (responsible persons are identified in parentheses after each step):

1. Ensure that the proposed consultant service is consistent with the Colorado Department of Transportation's (CDOT's) Long- Range Plan, Statewide Transportation Improvement Plan, the CDOT budget, and the Obligation Plan (Program Engineer, Resident Engineer and Business Office).
2. Develop the Scope of Work (SOW). For non-fund encumbering (generally, Non-Project Specific (NPS) contracts), the SOW should provide a general description of the anticipated services. For fund encumbering contracts and task orders, the SOW will be project specific and detailed to include all requirements and deliverables. If the consultant is known, the SOW should be reviewed with the consultant and modified as necessary for clarity (Resident Engineer).
3. Prepare an Independent Cost Estimate (ICE) as described in "Section 1.05.01.02" below (Resident Engineer).
4. Prepare a justification memo from the region explaining the need for consultant services.
5. Send the SOW to the region Equal Employment Opportunity (EEO)/Civil Rights Specialist to set the Disadvantaged Business Enterprise (DBE) goals.
6. The Engineering Contract Services Unit contracting officer will prepare the Memo to the Chief to Request Ad and route all necessary documents for signature by the appropriate signature authorities.
7. Fill out the Selection Checklist with essential contract information including the selection panel (Resident Engineer) which is signed and certified by the Program Engineer.
8. Include key events schedule (Resident Engineer and the Engineering Contracts Unit Services staff) in the Request for Proposals (RFP) document.
9. Advertise the RFP and SOW on the CDOT website and BidNet and, as needed, in special journals (contract officer).
10. Coordinate and facilitate selection panels to achieve consensus and make a recommendation to the Chief Engineer (contract officer).
11. Obtain Region Transportation Director's (RTD's) approval of the selection results (Resident Engineer).
12. Obtain the Chief Engineer's approval of the selection results (contract officer).

13. Notify consultants of selection results via e-mail (contract officer).
14. Finalize the Independent Cost Estimate (ICE). The Independent Cost Estimate Form.xls and many other resources are available on the Engineering Contract Services Unit Professional Services (Resident Engineer). Note: For task order contracts, this step is done for each task order request.
15. Verify the consultant has an active master pricing agreement in place, insurance information, and initial cost proposal (consultant audit).
16. Initiate audit liaison review (Engineering Contract Services Unit).
17. Negotiate consultant fee and final contract cost exhibit (contract writer).
18. Prepare final contract and route the contract for approval and signatures. Distribute executed contract (Procurement and Business Offices).
19. Issue the notice to proceed to the consultant (Engineering Contracts staff).
20. Debrief consultants, as requested, on selection results (contract writer).
21. Compile selection documentation and transmit the selection file to the Colorado Department of Transportation (CDOT) Records Center (contract writer).

1.04.02 Preparing an Independent Cost Estimate for Consultant Services

1.04.02.01 Background

Professional (engineering and architecture) services for CDOT projects are acquired through a qualifications-based process in accordance with the Brooks Act (Title 40 United States Code, Chapter 11, Section 1101-1104). The Brooks Act requires agencies using federal funds for construction projects to promote open competition by advertising, selecting, and negotiating contracts based on qualifications, and at a fair and reasonable price.

State and Federal laws require State Departments of Transportation to develop an ICE, including an independent work hour estimate, as a part of the contracting process for all professional services. An ICE must be completed for all contracts and task orders valued in excess of $100,000.

1.04.02.02 Definitions

Assumptions – An important component of an ICE is documenting assumptions relative to the tasks, such as definitions, resource needs, durations, and so forth.

Independent Cost Estimate (ICE) – A cost estimate to accomplish the Scope of Work (SOW), completed by the Colorado Department of Transportation (CDOT) Project Manager (PM). In addition to the cost of labor, an ICE should include fees, material costs, equipment charges, indirect charges and all other costs for a contract.

SOW – A detailed listing of requirements, criteria, and objectives for services that a consultant is expected to provide.

Work Hour Estimate (WHE) – Used to develop the ICE, the estimated consultant labor hours required to complete the established SOW.

1.04.02.03 Process

Non-Fund Encumbering Contracts:

Non-fund encumbering contracts are typically Non-Project Specific (NPS) contracts for which specific service needs are defined and executed through Task Orders. A solicitation request for this type of contract to the Engineering Contracts Unit must include an ICE Summary. Although specific work details may be unknown, the ICE should provide a general estimate identifying the number of consultant work hours and cost, to justify the value of the contract to be awarded. The ICE should be formatted using the template found on the Engineering Contracts Professional Services.

Fund Encumbering Contracts/Task Orders:

For fund encumbering contracts or task orders, the ICE is more detailed because the consultant and specific work requirements are known. In this case, the following steps must be completed prior to submitting an ICE with a solicitation request to the Engineering Contracts Unit:

1. ICE (Required (greater than $100,000)) – Upon completion of the SOW the CDOT PM and consultant separately must complete an ICE based on the estimated resources, work hours and other related material/services needed to accomplish all of the required tasks. To simplify the negotiation process, the CDOT PM and the consultant should use an identical format for the work hour estimate. Assumptions should be clearly documented, and all applicable labor, equipment, materials, and other costs should be included.
2. Work Hour/Project Cost Negotiation (Required (greater than $100,000)) – Upon completion of the ICE's, CDOT and consultant PM's should review and negotiate the work hours and project costs, regardless of the magnitude of the differences in the estimates. The basis of the negotiation should address the allocation of resources and work hours, and not solely the total cost. The final work hour distribution and

project cost shall be documented on the Work Hour and Cost estimate Worksheets in the Independent Cost Estimate (ICE) Summary; see below “Number 3”. Copies of the Colorado Department of Transportation (CDOT) and consultant ICE’s should be retained in the project records.

Any changes to the Scope of Work (SOW) as a result of the negotiations should be incorporated in the Final Statement of Work submitted with the solicitation request.

3. ICE Summary (Required (greater than $100,000)) – The Summary will include the initial CDOT ICE as well as a comparison of the CDOT; and
4. Consultant Total Cost estimates, as prepared and prior to negotiation. The ICE Summary **must** be formatted using the template found on the Engineering Contracts Professional Services.

Note: If a Task Order Amendment is of a value greater than $100,000 **Or** a Task Order Amendment revises the collective Task Order value greater than $100,000 for the first time, steps one through four above are required.

1.04.03 Obtaining a Construction Manager/General Contractor (CMGC) Contract (Alternate Process)

The following steps are necessary to obtain an executed CMGC contract. The Engineering Contracts Unit shall perform the steps unless otherwise noted (responsible persons are identified in parentheses after each step):

1. Ensure that the proposed CMGC service is consistent with CDOT’s Long-Range Plan, Statewide Transportation Improvement Plan, the CDOT budget, and the Obligation Plan (Program Engineer, Resident Engineer and Business Office).
2. Develop the SOW (Resident Engineer).
3. Prepare a contract cost estimate (Resident Engineer).
4. Prepare CMGC selection request, including the Underutilized Disadvantaged Business Enterprise (UDBE) goals, for the Chief Engineer’s approval for advertisement (Resident Engineer and region Equal Employment Opportunity (EEO)/Civil Rights specialist).
5. Establish a CMGC selection panel per CMGC guidance from the Innovative Contracting Advisory Committee (Resident Engineer).
6. Create a selection schedule (Resident Engineer and the Engineering Contracts Unit staff).

7. Advertise an Invitation for Construction Manager/General Contractor (CMGC) Services on the Internet and, as needed, in special journals (contract writer).
8. Create and distribute the selection information and instruction package to the CMGC and Colorado Contractors Association (CCA) community (contract writer).
9. Coordinate and facilitate selection panels to achieve consensus and make a recommendation to the Chief Engineer (contract writer).
10. Obtain the Region Transportation Director's (RTD's) approval of the selection results (Resident Engineer).
11. Obtain the Chief Engineer's approval of the selection results (contract writer).
12. Notify Contractors of selection results (contract writer).
13. Finalize the Scope of Work (SOW), and for project specific funds-encumbered contracts, negotiate work hours and the cost proposal (Resident Engineer and the Contractor representative), and submit those to the Engineering Contracts Unit. Note: For task order contracts, this step is done for each task order request.
14. Obtain and review the Contractor's financial information, insurance information, and initial cost proposal (contract writer). (Only for Brooks Act CMGC contracts.)
15. Initiate audit evaluation (contract writer). (Only for Brooks Act CMGC contracts.)
16. Analyze audit evaluation report and negotiate Contractor fee and final contract cost exhibit (contract writer). (Only for Brooks Act CMGC contracts.)
17. Prepare final contract and route the contract for approval and signatures. Distribute executed contract (Procurement and Business Offices).
18. Issue the Notice-to-Proceed to the Contractor (Engineering Contracts Unit staff).
19. Debrief Contractors with a CMGC Debrief Template on selection results. In-person debriefs are optional and up to the Resident Engineer (contract writer).
20. Compile selection documentation and transmit the selection file to the Colorado Department of Transportation (CDOT) Records Center (contract writer).

1.05 Alternative Delivery

CDOT has embraced alternative delivery to enhance project delivery efficiency and effectiveness. These delivery approaches offer alternatives to the traditional Design-Bid-Build method, allowing for increased collaboration and streamlined project execution. CDOT recognizes that alternative delivery can expedite project schedules, reduce costs, and improve overall project outcomes without compromising safety, ethics or quality.

By leveraging alternative delivery methods, the Colorado Department of Transportation (CDOT) aims to reduce project risk and improve project delivery timelines. These methods enable simultaneous design and construction activities, reducing the overall project duration compared to the sequential approach of Design-Bid-Build. This expedited timeline allows CDOT to deliver critical transportation infrastructure projects more quickly, addressing the growing demands of Colorado's transportation network.

Furthermore, alternative delivery methods provide opportunities for greater collaboration between stakeholders involved in CDOT projects. By involving Contractors and Designers in the early stages of the project, CDOT can benefit from their expertise, leading to optimized designs, increased constructability, and higher quality construction documents. This collaborative approach fosters innovation and creative problem-solving, resulting in improved project outcomes and enhanced value for the public.

1. Project Delivery Methods

- Design-Build
- Streamlined Design-Build
- Construction Manager/General Contractor
- Public Private Partnership

2. Procurement Methods

    - A+B
    - Multiple Bid Schedule
    - Alternate Bid Schedule
    - Project Specific Pre-qualification
    - Design-Bid-Build (DBB) Best Value

3. Innovative Financing

    - Phase Funding
    - Lump Sum Contracts
    - Value Engineering
    - Availability Payment
    - Operate and Maintain

4. Contract Management Techniques

    - Lane Rentals
    - Incentives/Disincentives
    - Liquidated Savings

Colorado Department of Transportation (CDOT) projects using these methods are currently tracked in Systems, Applications and Products in Data Processing (SAP). When the project is created or under design, the alternative delivery method being utilized for the project is to be populated in CJ20N under the Project Manager (PM) Tab and again during the 1180 workflow. Resident Engineers should work closely with the Alternative Delivery Program when considering an alternative delivery method. Resident Engineers shall also report any use of alternative delivery to the Engineering Estimates and Market Analysis Unit once a method has been chosen.

1.05.01 Project Delivery Methods

CDOT projects are typically delivered using a Design-Bid-Build (DBB) approach, where CDOT defines the scope and requirements of a construction project by fully completing design documents, either in-house, or with the assistance of design consultants. A construction Contractor is then selected to build the project using the lowest responsible bid as the sole criteria. In traditional DBB delivery, risk is primarily borne by the owner, as preconstruction and construction phases are managed separately, increasing the potential for design errors and omissions that may lead to disputes and delays during the construction phase.

CDOT projects can also be delivered using alternative contracting methods such as Design-Build (DB), Streamlined Design-Build, Construction Manager/General Contractor (CMGC), or Public Private Partnerships (PPP's). These methods have been approved for use by federal regulations, state statutes, and CDOT policies and procedures. To ensure a competitive procurement environment, CDOT follows a rigorous selection process, including a thorough evaluation of proposals, ensuring that the best value for the project is achieved.

DB is a contracting method where the owner, CDOT, of a project enters into a single contract, with a DB team, to complete the design and construct the project. The DB team is typically procured using a two-phase process. The first phase is issuing a Request for Qualifications (RFQ) to solicit potential DB teams. Once the RFQ responses have been received and evaluated, the most qualified teams are shortlisted.

A Request for Proposals (RFP) is issued in the second phase. CDOT project team develops and issues the RFP and defines the project scope through a set of technical requirements, and performance based specifications. The shortlisted DB teams are invited to submit a proposal in

response to the Request for Proposals (RFP). The Colorado Department of Transportation (CDOT) evaluates the proposals received from the shortlisted teams against the evaluation criteria set out in the RFP. This evaluation should be done in a transparent and fair manner, considering the specific needs of the project. Once the proposals have been evaluated, CDOT selects a Design-Build (DB) team using a Best Value process where price and other factors such as schedule, past performance, project innovation, design alternatives, aesthetics, and quality management are considered.

DB project delivery offers several benefits over traditional delivery methods for highway construction. One of the main benefits is that it brings together the design and construction phases under a single contract, allowing for better coordination, communication and efficiency. This can lead to faster project delivery times, improved quality control, and potential cost savings. With DB the owner transfers a significant portion of project risks to the DB team, who assumes responsibility for both design and construction, reducing the owner's risk exposure.

Construction Manager/General Contractor (CMGC) is a contracting method used where the owner, CDOT, of the project enters into separate contracts with a construction manager and a General Contractor (GC). The construction manager is hired during the preconstruction phase to provide input and guidance on constructability, cost estimation, and scheduling. The GC is contracted for the construction of the project. CDOT can use its in-house design staff or hire a design consultant using the CDOT consultant selection procedures detailed in “Section 1.04”. CDOT also hires an independent cost estimator for the preconstruction phase using a professional services contract.

Procuring a construction manager follows a structured process. Initially, the CDOT project team develops and issues a Request for Proposals (RFP) that outlines the project scope, goals, selection criteria, contractual requirements, and submission instructions. Prequalified Construction Management (CM) firms are solicited to submit proposals. The proposals should demonstrate the firm's understanding of the project, its ability to meet CDOT's objectives, and its relevant experience. CDOT then evaluates the submitted proposals based on predetermined criteria. The teams with the highest ranked proposals are shortlisted. Shortlisted CM firms are invited to participate in interviews to further evaluate their capabilities and suitability for the project. These interviews provide an opportunity for the CM firms to elaborate on their proposals and showcase their expertise. Finally, CDOT awards the contract, based on the evaluation of the proposal and interview, to the CM firm that can provide the best value for the project.

In Streamlined Design-Build the design and construction phases overlap to expedite project delivery. CDOT streamlines the procurement process by prequalifying DB teams based on their qualifications, experience, and capacity. Once selected, the DB team collaboratively develops the project's design and construction plans, maximizing the opportunities for innovation and value engineering. This streamlined approach enables the CDOT to accelerate

project completion, enhance collaboration between stakeholders, and deliver projects that meet Colorado's growing transportation needs.

Construction Manager/General Contractor (CMGC) project delivery offers several benefits over traditional delivery methods. Early involvement of the construction manager allows for valuable input during the design phase, optimizing constructability, cost estimation, and scheduling. The collaborative approach fosters effective coordination and communication, reducing conflicts and ensuring smoother project execution. Value engineering opportunities can lead to cost savings and improved efficiency. Risk ownership in CMGC delivery is typically balanced between the owner and the CMGC team, as the construction manager's early involvement in the project allows for risk identification and mitigation, while the CMGC team assumes responsibility for construction-related risks.

In Public Private Partnerships (PPP's), the Colorado Department of Transportation (CDOT) executes contracts with private entities or developers to design, construct, operate, maintain, and finance large-scale transportation projects in return for monetary compensation derived from the transportation improvement(s). CDOT typically utilizes a two-phase DB process to award PPP's. Solicited PPP's are preferred by CDOT, as opposed to unsolicited PPP's because they provide CDOT with improved levels of risk management, contract negotiation, and Best Value determination.

Several factors are evaluated when determining the most appropriate delivery method for a project, including project complexity, opportunity for innovation, cost and schedule considerations, program and project goals, risk allocation, Contractor capability, and CDOT's capacity to develop, implement and manage the contract.

If a project manager feels that a project could benefit from Contractor input during pre-construction to improve constructability, enhance innovation, shorten schedule, reduce risks or save costs, they should reach out to the Alternative Delivery Program to schedule a meeting to determine if a Project Delivery Selection Matrix Workshop is warranted. If warranted, the Workshop will help to evaluate and select the most appropriate delivery method for the project. It is important to consider this option early in project development and ideally during the scoping phase of the project to maximize potential benefit. The CDOT Alternative Delivery Program is available to assist with facilitating a project delivery selection matrix workshop to determine the most appropriate method for your project and should be contacted anytime alternative delivery is considered. For further information regarding CDOT alternative delivery contracting methods, please visit the program's website: Alternative Delivery Program | Design-Build & Contract Manager / General Contractor.

1.06 Entity Agreement (Local Agency & Publicly Owned Agencies

An entity agreement is required when CDOT and an entity have a shared financial interest in a transportation project.

The entity agreement identifies the responsibilities of every party and their respective financial contributions. The agreement enables the transferring of funds between CDOT and the entity. The term, entity, as used here, refers to a local public agency or publicly owned agency, that can legally enter into an agreement with CDOT for a transportation project. The following definitions apply:

Local Public Agency is any city, county, township, municipality, or other political subdivision that is empowered to cooperate with the Colorado Department of Transportation (CDOT) in transportation matters. This is usually referred to as a local agency. An agreement between CDOT and a city or county is entered into when a project is within a local public agency's jurisdiction and CDOT administers the federal-state funding. When the entity is a local public agency, the CDOT Colorado Local Agency Program guidelines apply. See the Local Agency Manual in Manuals. And, the 2022 CDOT Local Agency Project Desk Reference.

Public Agency is any organization with administrative or functional responsibilities directly or indirectly affiliated with a national, state or local jurisdiction. CDOT may enter into an agreement with another state agency, a federal agency such as the National Forest Service, or a regional agency such as the Denver Regional Council of Governments. The Resident Engineer should work with the entity to determine the parameters of an appropriate agreement whenever an entity or public agency needs to:

1. Maintain or construct a project affecting the state highway system.
2. Provide funds for such a project;
3. Receive funds for such a project or
4. Address other interests that require the entity to coordinate with CDOT on such a project.

The Project Manager (PM) works closely with the Engineering Contracts Services in the Engineering Contracts Branch to establish a contract for the team. These teams are responsible for the execution of an agreement between CDOT and an entity or public agency except for Right of Way agreements (which are done by the regional Right of Way Unit. If there will be utility involvement (the relocation of existing facilities or the installation of new services) the Resident Engineer must coordinate with the region Utilities Engineer to determine if any contracts may be required, and to initiate contract development.

In general, a separate contract with each involved utility will be required for any work by the utility for which CDOT repays the utility, or for utility work incorporated into the project for which the utility repays the project. A utility's reimbursement is determined by the Utility Accommodation Code. The region Utilities Engineer, in consultation with the Resident Engineer, negotiates an appropriate agreement with the utility in coordination with the Engineering Contracts team. Those negotiated terms must then be documented on a formal contract and executed by the authorized parties (Chief Engineer and State Controller).

Any agreement not on an Office of the State Controller (OSC) template must be approved by OSC before being processed by Engineering Contracts Services and then routed for OSC signature. All required utility agreements must be in place before the project being advertised for construction.

The following steps for implementing an original entity agreement or an modification to an entity agreement for a transportation project are performed by the following parties:

Project Manager (PM) Responsibilities:

1. Ensure that the proposed entity agreement is consistent with the Colorado Department of Transportation's (CDOT's) long-range plan, Statewide Transportation Improvement Plan (STIP), the CDOT budget, and the obligation plan. (Program Engineer, Resident Engineer and Business Office).
2. Determine division of work responsibilities for the project (Resident Engineer and entity representative).
3. Prepare and transmit to the Engineering Contracts Services a contract request form, including approved shopping cart for encumbering requests; and if the following is not attached to the cart, include a Form 1243 Local Agency Contract Administration Checklist, completed Exhibit C, Exhibit A: Scope of Work and Purchasing Approval Routing sheet.
4. Review and comment on contract draft.
5. Issue a notice to proceed to entity.

Engineering Contract Writer Responsibilities:

1. Review and analyze contract request, prepare draft contract, and forward draft to region.
2. Revise final draft, if requested and, as appropriate, to address entity concerns (in coordination with the Resident Engineer, Region Business Office, and the Office of State Controller, as needed).
3. Route the entity-signed contract copies for execution.

PM's must review local agency solicitation advertisements prior to publication for consultant professional services. Professional service solicitations must be in compliance with Brooks Act or the Colorado Revised Statute equivalent. These laws require qualification-based selections for all professional services funded by federal or state funds. The local agency Area Engineer shall support any items identified as possible noncompliant by the region's review of an entity-consultant selection process.

Construction solicitations that use traditional invitation for bid methods, the review of bid documents takes place after the low bidder is identified. If the local agency uses alternate delivery, their alternate delivery process must be reviewed and approved by the director of alternate delivery in advance of advertisement.

The documents required to secure concurrence from the Colorado Department of Transportation's (CDOT's) construction contract manager under delegation from the Federal Highway Administration (FHWA) include a financial statement, and Forms 605, 606, 621, 1414, 1415 and 1416 (1414-1416 when a Disadvantaged Business Enterprise (DBE) goal is set for the project) with a request for concurrence to award cover letter. A letter of concurrence will be produced by the construction contract manager once the solicitation process has been reviewed and approved.

For additional information on intergovernmental agreements see the Flowcharts on the Local Agency Manual site.

1.07 Post-Award

At the time of award, the construction phase budget will be adjusted so that it matches Form 65 Project Financial Statement exactly. The preconstruction phases have to be closed shortly thereafter (approximately 30 days) or a request with justification has to be made to keep the funds open.

The approved commission budget level is significant in determining the number of authorized actions over the life of a project. Use Systems, Applications and Products in Data Processing (SAP) transaction ZJ20 to access Form 65 which will indicate the Approve Commission Budget. It is from this dollar amount that the 10 percent will be computed for determining if Chief Engineer approval is required for project award during the project bid process. It is also from this amount that the 15 percent will be calculated to establish if Transportation Commission (TC) action is required to increase the project budget or for award of a project at bid.

Any request for additional budget greater than 15 percent of the approved TC budget will be processed through a budget supplement action, which occurs on a monthly basis.

If the budget request is less than 15 percent of the TC approved budget, the Office of Financial Management and Budget (OFMB) may approve the request as an "allotment advice". Allotment advice includes transfers to projects from pools or other projects. An allotment advice is usually processed within a few days. Refer to Policy Directive 703.0.pdf for more information including this Adopted Policy Directive 703.0 Matrix.

Any surplus or deficit amounts will be corrected by the regional business managers with a budget action submitted to the Office of Financial Management and Budget (OFMB) for approval to de-budget or supplement the amount.

1.08 FORM 895 – Force Account Construction Method – Finding in the Public Interest (FIPI))

The term, force account construction method, refers to construction work a public agency (typically a local agency) performs on federal or state funded projects using its own forces. Specifically, it means the direct performance of highway construction work by the department, local entity, county, railroad, public utility company, or other agency by use of labor, equipment, materials, and supplies furnished by the agency and used under its contract terms (23 Code of Federal Regulations (CFR) Part 635.203(c)). This section does not apply to work as defined in Colorado Department of Transportation's (CDOT's) Standard Specifications.

Competitive bidding is specifically required by Title 23 US Code (USC) 112. Waiving the requirements should be done only after careful consideration of the effect or precedent that will be set. Projects may be entirely or partially constructed by the force account method only when it is determined that the needs of the public will be better met by not following the general rules.

If circumstances justify a negotiated contract or another unusual method of construction, the policies and procedures prescribed for the force account construction method apply.

A FIPI fully justifying the use of the force account construction method must be prepared and documented on Form 895 Force Account Construction Method Finding in the Public Interest. All supporting documentation must be attached.

The force account construction method may be justified on a federal or state funded project under any one of the following conditions:

1. Emergency work, as defined in "Section 120.8" of CDOT's Construction Manual, is necessary to protect public health and safety, or a major element or segment of a highway or roadway has failed, and competitive bidding is impossible or impractical. Competitive bidding may be precluded because immediate action is necessary to minimize the extent of the damage, to protect remaining facilities, or to restore essential travel as provided in 23 CFR 635.204(b).
2. The inherent nature of the operation makes it cost effective to perform minor adjustments (as determined by the railroad or utility) of railroad and utility facilities by the force account construction method, while the majority of work is performed by competitive bid. See 23 CFR 635.205(b).

3. It is typically cost effective to perform work that is incidental to the main purpose of the project by the force account construction method. The majority of work is still accomplished by competitive bidding.
4. It is also typically cost effective to perform the work by the force account construction method and the agency demonstrates that the circumstances are unusual and unlikely to recur.
5. The construction contract value is under $50,000 and does not justify the costs associated with the competitive bidding process; or there is a lack of bids, or the bids received are unreasonable.

When the force account construction method is considered, it must be justified by a cost effectiveness determination that shows a substantial savings over estimated contract prices.

1. The cost effectiveness determination should compare the detailed cost estimate for work by the force account construction method with the detailed cost estimate of work by the competitive bid method of construction. The estimates for both shall be all inclusive so a fair and equal comparison can be made.
2. The public agency estimate for the force account construction method must include all costs associated with the work and not just the work that will be billed to the project. These costs include non-reimbursable costs that are inherent to the work including labor, overhead, equipment, materials, and supplies.
3. The cost effectiveness determination may be based on unit prices, including all engineering and administrative costs. Unit prices must be based on the cost of performing the work. If the public agency has no set rates for its equipment, it may use the current rental rates specified in “Subsection 109.04(c)” of the Colorado Department of Transportation’s (CDOT’s) Standard Specifications.
4. The cost effectiveness determination must include the overhead costs incurred by the public agency (employee wages, benefits, and equipment costs) and other items subsidized by the taxpayer.
5. To perform work by the force account construction method, the public agency must be adequately staffed and suitably equipped to perform the work cost effectively in the prescribed time.

The following items of documentation, when used to justify the use of force account construction methods by a public agency, must be retained in the project files:

1. Form 895 – Force Account Construction Method – Finding in the Public Interest.
2. Cost effectiveness determination.

3. Evaluation that demonstrates the circumstances are unusual and unlikely to recur.
4. Documentation of the emergency.
5. Documentation demonstrating a lack of bids or bids received were unreasonable.

The region administration process for the force account construction method includes the following procedures.

1. The region investigates the public agency's request to use the force account construction method.
2. The public agency Project Manager (PM) completes a Form 463 Design Data that clearly indicates the method used.
3. The region Program Engineer certifies that the public agency is capable of administering and performing the specified work and assembles the supporting documentation listed on Form 895 – Force Account Construction Method – Finding in the Public Interest.
4. The public agency prepares a set of plans. The minimum plans consist of:
    a. General plan sheets (typical sections, plan and profile) as applicable.
    b. Estimate of quantities (summary of quantities).
    c. Tabulation of bid items, general notes, description of project work type, and location (map).
    d. Special details, as required.
    e. Special Provisions, as required.
5. The public agency obtains all required clearances and permits as applicable on Form 1048 Project Scoping/Clearance Record.
6. Systems, Applications and Products in Data Processing (SAP) shall show that the project will be constructed by the force account construction method, whether state forces or a local agency does the work.
7. The Colorado Department of Transportation's (CDOT's) Office of Financial Management and Budget (OFMB) completes Form 418 after receipt of the signed Form 1180. Obligation must be requested and approved through SAP. For federal aid projects, Form 418 is used to obtain obligation/authorization approval for the construction phase from the Federal Highway Administration (FHWA).
8. For projects that do not go through CDOT's bid process, the region issues a notice to proceed only when all of the following are complete:

a. All documentation justifying the force account construction method is complete.

b. Plans are complete and approved by the Resident Engineer.

c. Obligation authority and funding are cleared by the Resident Engineer.

A copy of the notice to proceed must be sent to the Office of Financial Management and Budget (OFMB) and Projects and Grants for the Colorado Department of Transportation (CDOT) to authorize expenditures for the construction phase.

Blanket approval under force account is given to state forces (with a current limit of $5,000) for certain advance construction signing, temporary construction striping, permanent signing, and permanent striping, all of which have an existing blanket Federal Highway Administration (FHWA) approval.

The Center for Procurement and Contract Services in the Division of Finance and Accounting provides contract support for intergovernmental agreements, agreements with Municipal Planning Organizations and private entities.

Additional Resources:

23 Code of Federal Regulations (CFR) part 635B, Force Account Construction

For forms, see CDOT on-line forms library: Online Forms Catalog

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