Efficiency Measures

1. Advance Mitigation
2. Cold-In-Place Recycling and Full Depth Reclamation
3. Complete Streets
4. Construction Manager/General Contractor
5. Corridor Streamlining
6. Design-at-Risk
7. Design-Build
8. Focusing Federal Dollars
9. Project Acceleration Toolbox
10. Public-Private-Partnerships
11. Quality Management

Regulatory Reforms

1. CEQA Reform Placeholder
2. Cross Regulation Reduction
3. Federal Act Recommendations
4. Federal Delegation Expansion
5. Local Control – Remove Barriers
6. Programmatic Expansion
7. State/Local Integration of NEPA Delegation

Statewide Needs Assessment Efficiency Measures Worksheet

Efficiency Measures to Address Ten-Year Projected Funding Shortfall				
Efficiency Measures	**Estimated Annual Cost Savings**	**Estimated Ten-Year Cost Savings**	**Assumptions**	**Implementation Requirements**
1. Advance Mitigation -Designate a State or Federal Agency to develop and manage an advanced mitigation bank. Encourage up-front planning and agreements for advance mitigation for biological and wetlands impacts.	1-2% of statewide program	1-2% of statewide program	Eliminates the costly and time consuming process of providing off-site mitigation on a permit-by-permit basis, project-by-project basis.	Political Support Required to Implement and project money up front instead of "pay as you go". Legislation to assist larger scale efforts to promote advanced mitigation is needed to designate agency to develop and manage off site mitigation.
2. Cold-In-Place Recycling (CIR) & Full Depth Reclamation (FDR) - Increase use of these technologies to reduce local street and road maintenance costs.	$1,000,000,000	$10,000,000,000	Existing materials are used and the project time is greatly reduced, these technologies can shave between 30 and 40 percent off the cost of a typical road project. Assumed used on 1/2 of local roadways.	Utilize CIR and FDR as the preferred method for maintaining and repairing streets. Legislation is not required.
3. Complete Streets - Monitor completion of complete streets to identify efficiencies to be achieved during the planning process.	TBD	TBD	Potential of including complete streets in projects from conceptual phase will help provide additional transportation options while saving hours of valuable staff time and reducing construction costs.	Continued monitoring over the next several years will require only modest staff resources.
4. Construction Manager/General Contractor - Once determined successful, introduce legislation to provide CMGC authority as alternative delivery tool.	TBD	TBD	Potential for significant cost savings, mitigation or elimination of project risks. Other state DOTs have experienced reductions in change orders in excess of 50%.	Legislation to expand authority beyond pilot program of six projects would be required to implement as a standard project delivery alternative.
5. Corridor Streamlining - Conduct pilot program to determine the benefits of approving a program of projects to meet broader transportation goals, address cumulative impacts & early mitigation strategies.	TBD	TBD	Likely to reduce time and expense associated with project level analysis and deliver projects to construction earlier. Also leads to better land use coordination & greater governmental efficiency.	Acceptance from FHWA and at least several regulatory agencies would be required. Implementation period 2 years for pilot & 5-10 years for adoption.
6. Design at Risk - Implement as an alternative delivery method for certain projects. Allows accelerating design near completion, including development of draft bid documents prior to project approval	TBD	TBD	Savings can be high in both time and cost savings. Project development capital outlay and support costs can be reduced by as much as 25% to 30%. Time to implement can be reduced by as much as 50%.	Changes to existing laws are not required for implementation.
7. Design-Build - Pending results of design-build demonstration program, enact legislation to authorize design build authority as alternative delivery tool.	TBD	TBD	Proven to provide faster delivery, increase cost containment and certainty, increase innovative design, material, and construction methods; and enhance risk transfer to contractor, reduce risk to public agency.	Legislation required to provide design-build authority to expand beyond pilot program.
8. Focusing Federal Dollars - Establish a "bank" or exchange where agencies can swap federal funding. This can be done now in areas with local funding. On a statewide basis, state funding is required to utilize federal dollars on as few projects as possible.	$43,000,000	$432,000,000	Reduce administrative costs, provide increased flexibility (measure funds can be moved easily between projects - state/federal $ cannot). Swapping federal funds can reduce overall costs by approximately 5%.	State funding to create "bank"; Legislation not needed.
9. Project Acceleration Toolbox - provides Caltrans, external partners valuable tools to accelerate project delivery.	TBD	TBD	NEPA Delegation; Permit Engineering Evaluation Report; Project Agreement Construction Tool; Programmatic Agmts; Cost +Time (A+B) Contracting; Smart (Flexible) Start; Incentives/ Disincentives.	Changes to existing laws are not required for implementation.
10. Public Private Partnerships - Encourage use of private partnerships for applicable projects.	TBD	TBD	Provides full life-cycle costs, transfer operations & maintenance risks to private sector, greater cost certainty, faster delivery.	No new action required.
11. Quality Management - Utilize a statewide definition to evaluate, measure and report quality.	TBD	TBD	Time and resource savings with full implementation are anticipated. Caltrans may need to redirect resources to regional teams.	Caltrans estimates a plan by June 2013 for full implementation.

Statewide Needs Assessment Regulatory/Other Reforms Worksheet

Regulatory/Other Reforms to Address Ten-Year Projected Funding Shortfall		
Regulatory and Other Reforms	**Assumptions**	**Implementation Requirements**
1. CEQA Reform Placeholder		
2. Cross Regulation Elimination - reduce through interagency agreements. Parallel state and federal laws and permitting agencies, and overlap between regulations drives up cost of project delivery and resource protection.	Cost of cross-permitting is unknown but may add many millions per year in administrative costs and project delays.	Recommend Governor & Legislature reduce cross-regulation by promoting "consistency determinations" or cross-delegations between permitting agencies. Permitting responsibilities should be agreed upon between regulatory agencies to cover overlapping requirements. Legislation may be required as there is no incentive for any agency, etc., to give up authority and no relief for liability.
3. Federal Act Recommendations- assure integrity of hwy and transit funds; stabilize revenues; prepare way to transition to funding stability; provide means for state of good repair; establish goods movement as national priority; create program and funding to relieve growing congestion of global gateways; establish investment strategy.	No Cost Saving Assumptions Provided	All levels within State to speak with one voice in communicating priorities.
4. Federal Delegation Expansion - State agencies should seek delegations or assignments of responsibilities from parallel federal agencies. Example: CT FHWA NEPA delegation and partial delegation from Office of Historic Preservation and Advisory Council for most cultural reviews. MAP 21 initiates allowing equivalent state environmental requirements to substitute federal requirements.	No Cost Saving Assumptions Provided	Encourage Governor & Legislature to promote Federal delegations to State agencies. CA could support MAP 21 required Comptroller General analysis of allowing state requirements to substitute for federal. Caltrans should aggressively support an analysis to determine if CEQA can be substituted for NEPA, Porter-Cologne can be substituted for the Clean Water Act, the CA Endangered Species Act can substitute for the Federal Endangered Species Act., etc. Would require change in Federal and possibly State laws.
5. Local Control - Remove Barriers for Regulation/Enforcement of Parking/Congestion Factors - Allow Cities with preferential parking districts to include congestion and transportation impact costs in the calculation of residential parking permits; address disabled placard abuse.	Removes barriers to local regulation of parking and congestion; likely to generate revenue and alleviate congestion.	Legislation is required.
6. Programmatic Expansion - Provides that regional or corridor issues are resolved at a programmatic level and not at a project level. Example: Federal Clear Air Act air pollutants are handled at air basin basis; transportation plans/programs "conform" to air quality plans and individual projects in those plans/programs do not have to individually evaluate their contributions to ozone formation, etc.	No Cost Saving Assumptions Provided	Requires Governor and Legislature to support programmatic approaches. Upfront funding required but over the long term provides savings.
7. State/Local Integration of NEPA Delegation- FHWA environmental responsibilities can only be delegated to a statewide agency. MAP 21 allows this to be extended to transit and rail projects, once regulations are promulgated and the state negotiates an agreement with FHWA.	If local agency were both CEQA and NEPA lead, time required for additional NEPA review would be avoided.	Federal (and possibly State law) is required to allow a local agency to be NEPA lead. Also, Caltrans delegation required state legislation to waive state's sovereign immunity, etc. For example, many requirements were placed on Caltrans through state legislation to implement NEPA delegation that drove up costs.

Advance Mitigation

Introduction

Major transportation improvement projects often impact biological resources or wetlands. In general, under CEQA and NEPA, "significant" impacts to natural resources and farmland must be mitigated. If impacts to biological resources or wetlands cannot be avoided, habitat for state or federally listed endangered species must be replaced. In addition, if impacts to wetlands cannot be avoided, wetlands must be replaced to satisfy the Federal Clean Water Act and California's Porter-Cologne Act.

The need to replace impacted habitat, wetlands, or farmland on an individual project level can cost from less than 1% of the cost of a project to as much as a third in unusual circumstances. On a programmatic basis, the cost of off-site mitigation varies throughout the state, but lies between 2 and 10 percent of total project costs, probably averaging around 5% of project costs statewide.

Currently, off-site mitigation is usually developed on a permit-by-permit, project-by-project basis. This is very inefficient for a number of reasons:

- Mitigation occurs at the same time as the impacts, requiring that a "multiple" or "mitigation ratio" be applied as there is a temporal loss of the resource.
- Mitigation must be developed based on land availability at the time of project mitigation negotiations. This can drive up the cost of acquisition.
- Mitigation is maintained by the project sponsor or by a third party that can be found at the time of need. This can increase costs and impose long-term risks and liabilities.
- Mitigation negotiations are driven by the project timing, leaving the project proponent in a bad negotiating position and often leading to adversarial negotiations. This can drive up costs and increase mitigation requirements.
- Mitigation is scattered and less manageable, reducing the biological benefit.

Anecdotally, it appears that the cost of off-site mitigation can be reduced by at least a third if it is acquired in advance programmatically. This is for the following reasons:

- Mitigation ratios are reduced because the mitigation is in place prior to impacts.
- Mitigation land can be acquired opportunistically and without as much time pressure, allowing lower costs.
- Mitigation properties can be better managed in groups or as part of larger properties, reducing long term costs, risks, and increasing biological benefits.
- Mitigation is developed in advance in partnership with permitting agencies, avoiding conflict and potential project delays.

Of course, the down side of an advance mitigation scheme is that money must be provided up-front for mitigation, instead of "pay as you go" as project construction funding becomes available. In addition, the scheme must have the ability to predict needs well to avoid over-mitigation or the purchasing of the wrong mitigation. However, since there is a general need for off-site mitigation in the state, it is likely

that mitigation credits could be sold to others, recovering some or all excess costs, or even generating a surplus.

With the above assumptions, an advance mitigation approach can reduce the overall programmatic cost of transportation by one or two percent statewide.

Application

This proposed efficiency measure can be applied at any level – local, regional, or statewide. However, the sponsor must have the ability to provide funding for mitigation in advance of project construction funding.

Accomplishments

SANDAG, with their $14 billion 40-year sales tax measure program predicts that they can save $200 million (1.4%) by spending $850 million to acquire off-site mitigation in advance of constructing projects rather than spending $1.05 billion on a project-by-project basis.

Other project sponsors, such as Riverside County Transportation Commission, Orange County Transportation Authority, and San Joaquin Council of Governments have also developed advance mitigation schemes with the expectation that by doing so, they avoid permit risk and project schedule delays. Others have done partial schemes; Monterey County has inventoried potential mitigation lands.

In the Sacramento Valley, a number of state and federal agencies have collaborated on determining the need for mitigation, mapped potential mitigation opportunities, and collaborated on joint acquisitions (the Regional Advance Mitigation Program or "RAMP"). From this work, the agencies are promoting a "Statewide RAMP", using lessons learned from the Sacramento Valley effort.

Yield Potential

Assuming that an advance mitigation scheme saves a third of off-site mitigation costs, and that off-site mitigation averages around five percent of project costs statewide, this approach can save one or two percent of the costs of the statewide transportation program over long periods of time. However, it should be recognized that, in the short term, costs are increased because there must be an up-front investment for planning and mitigation acquisition. If state and local agencies spend $10 Billion per year on transportation improvements, this strategy would save around $100 million per year.

Pros	Cons
Implementation of Advanced Mitigation: • Advance mitigation is a current practice, particularly of sales tax measure programs, and can reduce program costs and regulatory risks. • Surplus mitigation can be resold.	*Implementation of Advanced Mitigation:* • Up-front funding is needed for planning and acquisition. • There is risk of committed costs with no project benefit.

Implementation

- Period to implement: On a local basis, advance mitigation can be set up in months or years. Project mitigation can be developed in advance once impacts can be known and agreed upon with permitting agencies. Regional Habitat Conservation Plans (Section 10 of the Federal Endangered Species Act) or Special Area Management Plans (under the Clean Water Act) can take years to set up.
- Regional advance mitigation approaches can require substantial staff and consultant resources over a number of years. However, this can result in more predictability for project delivery and lower overall mitigation costs.
- Those that propose an advance mitigation program should consult with those that have already done so.

Conclusion/Recommendation

1. Advance mitigation is a proven method of improving project delivery and reducing mitigation costs.
2. Political support is necessary to sustain investments over time and to keep regulatory agencies engaged.
3. Legislation would assist larger scale efforts to promote advanced mitigation. Other states, for example, have designated a State or Regional agencies to develop and manage off-site mitigation.

ACTION: Encourage up-front planning and agreements for advance mitigation for biological and wetlands impacts. This can reduce overall costs by 1 or 2 percent.

References:

- SANDAG Environmental Mitigation Plan. http://www.sandag.org/uploads/publicationid/publicationid_1138_4880.pdf

Cold-In-Place Recycling and Full Depth Reclamation

Excerpt from Local Streets and Roads Performance Ten-Year Performance Objectives & Outcomes for New Funding prepared by CSAC and MTC:

Cold-In-Place Recycling (CIR) and Full Depth Reclamation (FDR) are two technologies that have been around for some time, but still have the capacity to grow as preferred methods for maintaining and repairing our streets. These technologies involve digging up old asphalt and recycling it on the spot at much cooler temperatures than more conventional remove and replace strategies. The ground up material is then mixed with an emulsifier and re-placed as smooth pavement. These technologies save a significant amount of greenhouse gas emissions, because the processes use existing materials that are already in place, eliminating the need for mining new aggregate and transporting materials between a quarry, asphalt plant and a job site. Since existing materials are used and the project time is greatly reduced, these technologies can also shave between 30 and 40 percent off the cost of a typical project.

If these technologies can be used on just half of the roadways that are candidates for these types of treatments, it would equate to savings of almost one billion dollars annually for local street and road maintenance.

Complete Streets

Introduction

In October 2008 Deputy Directive 64-R1 directed Caltrans staff to: "ensure that travelers of all ages and abilities can move safely and efficiently along and across a network of "complete streets." One of the key implementation steps outlined under DD-64-R1 has been the revision of the Project Procedures Manual, the Project Scoping Checklist, and the Project Initiation Document. These efforts seek to ensure that Complete Street project elements are included in the design and development of projects from day one.

During the project development process it is important that Complete Streets elements be considered from the beginning of the conceptual design phase through the end of construction. When these elements are not considered during the conceptual phase, it becomes difficult or impossible to include them at later stages of the process. Revising project plans and environmental documents requires additional time and money. Furthermore, when projects are completed that do not include Complete Streets elements, costly retrofits are often required to incorporate bicycle, pedestrian and other accommodations necessary to ensure safe and efficient travel by these modes.

Continued monitoring of the effectiveness of these changes will be needed to evaluate the success of these efforts and provide additional input for future revisions. In addition, Caltrans should seek to include complete streets components in all maintenance, rehabilitation and resurfacing projects since this is often the most cost effective time to modify striping and street design.

Yield Potential

Efforts will need to be undertaken by Caltrans to monitor the extent to which staff are complying with the changes to the Project Procedures Manual, the Project Scoping Checklist, and the Project Initiation Document and the extent to which Complete Streets elements are being included in maintenance and rehabilitation projects at both the State and District Level. The potential of including Complete Streets in projects from conceptual phase will help Caltrans provide Californians with additional transportation options while saving hours of valuable staff time and reducing construction costs.

Accomplishments

Many cities and local jurisdictions have begun to coordinate their maintenance efforts through their Capital Improvement Programs with the implementation of complete streets. For instance Glendale, Los Angeles and Ventura have all installed bicycle facilities as part of resurfacing projects. MTC and LA Metro both have instituted complete street checklists in their Call for Projects applications but additional research will be needed to determine how these requirements have improved the implementation of Complete Streets in their respective project lists.

Implementation

Continued monitoring and reporting on the implementation of DD-64-R1 over the next several years will require only modest staff resources to determine the extent to which new projects include Complete Streets elements. This monitoring will provide valuable insight into how transportation decisions are continuing to be made and further efficiencies that can be achieved in the planning process.

Pros/Cons

The provision of Complete Streets will help California meet its sustainability goals under AB 32 and SB 375 by providing Californians with transportation choices beyond the private automobile. By providing

transit, bicycling and walking options, Complete Streets will provide low cost travel choices that are cost effective to build. Caltrans can continue to build on the success of DD-64-R1 to ensure that the revisions that have been made to Caltrans manuals and checklists are implemented and that all projects provide safe and efficient travel options from the very beginning of the planning process.

Conclusion/Recommendation

Additional revisions to Caltrans Manuals will occur on an ongoing basis. Lessons learned from the current revisions to the Project Procedures Manual, the Project Scoping Checklist, and the Project Initiation Document can be included in other updates as they occur. Many statewide advocacy, public health, and local governments support the implementation of Complete Streets. AB 1358 also requires the adoption of complete streets into a city or county's transportation element upon revision.

References

DD-64-R1: http://www.dot.ca.gov/hq/tpp/offices/ocp/complete_streets_files/dd_64_r1_signed.pdf
Project Development Procedures Manual: http://dot.ca.gov/hq/oppd/pdpm/pdpmn.htm

Construction Manager/General Contractor (CMCG)

Introduction

Transportation projects are delivered primarily using the design-bid-build process. In this process, the transportation agency completes a design, advertises the project, and awards the construction contract to the lowest bidder. The design-bid-build delivery method has the advantages of being well established, widely understood and clearly defining roles for the parties involved. It also gives the transportation agency significant control over the end product since the transportation agency produces the design and conducts extensive inspection of construction. While this process works well for the vast majority of projects, it has distinct disadvantages such as lengthy delivery time, uncertain final project costs, claims exposure, and adversarial relationships between the transportation agency and its contractor.

CMGC (also known as Construction Manager-at-Risk) is a project delivery method through which a Contractor (Construction Manager) consults for the transportation agency during the design phase and acts as the General Contractor during the construction phase. During the design phase, the Construction Manager (CM) acts in an advisory role, providing constructability reviews, value engineering suggestions, construction estimates, and other construction-related recommendations. At a point at or before 100% design, the CM and transportation agency reach agreement on a Guaranteed Maximum Price (GMP). Agreement on the GMP can be achieved through a variety of methods. A typical process is to have the CM and transportation agency develop independent estimates which are then compared. If the transportation agency is satisfied that the estimates are within a reasonable range of each other, agreement is reached on the GMP. If agreement on the GMP is not achieved, the transportation agency completes the design and advertises the project using design-bid-build delivery. The CM is prohibited from bidding.

After the GMP is established, the CM begins construction, allowing for an overlap of the design and construction phases. Once construction starts, the CM assumes the role of General Contractor (GC) for the duration of the construction phase. Work that is not performed directly by the GC is bid to subcontractors pursuant to the transportation agency's competitive bidding process.

CMGC allows the transportation agency to retain full control of the design process while gaining valuable preconstruction input from the construction contractor who will eventually build the job. Its use in transportation is just beginning to be seen. However, it enjoys a wide acceptance in the building construction community. Its major benefits are the selection of the prime construction contractor on a basis of qualifications and use of a guaranteed maximum price contract. Additionally it lends itself well to fast-tracking and phased construction. However, these benefits will only be realized if CMGC is applied to appropriate projects.

Every project has its own set of goals, challenges and risks. No project delivery system is right for all types of projects. Having a variety of delivery systems to apply to a wide range of project types will help transportation agencies meet their delivery commitments in the most efficient way possible. Choosing the right delivery system depends on the specific facts and conditions for the project. Relying solely on one project procurement method effectively eliminates an integrated approach to design and construction, and any chance of delivering public works projects in the most cost efficient and timely manner possible. CMGC has been used successfully by a growing number of transportation agencies for selected projects to achieve specific project goals.

Yield Potential

CMGC has the potential for significant cost savings. CMGC provides a transportation agency the opportunity to work with its contractor to mitigate or eliminate project risks which leads to lower project costs. In addition, other state departments of transportation have experienced reductions in change orders in excess of 50 percent utilizing CMGC versus design-bid-build. Utah Department of Transportation has reported a 65 percent reduction in change orders when using CMGC.

Use/Restrictions

The use of construction manager/general contractor (CMGC) should be implemented at all levels as an alternative delivery method for transportation projects. Federal law allows the use of CMGC for federal aid projects. Specified local agencies have CMGC authority. Caltrans currently has authority for up to six projects as part of a pilot program authorized by passage of Assembly Bill 2498 in 2012.

Implementation

Caltrans has only recently obtained authority to use CMGC. Several transit agencies have utilized CMGC to delivery transit projects. Implementation of CMGC authority will require a concerted effort by all transportation agencies as there are still several organizations which oppose this method. The costs and effort of implementation should be fairly small as CMGC does not require significant changes to existing processes and procedures. Pursuit of CMGC authority should be part of a larger effort to acquire a variety of project delivery methods including design-build in order to assist in the efficient delivery of transportation programs.

Pros	Cons
Implementation of CMCG: • CMGC can provide opportunities for innovation and cost savings on appropriately selected projects.	*Implementation of CMCG:* • Cost and schedule impacts when implementing a new delivery method.

Conclusion

No project delivery system is right for all types of projects. Having a variety of delivery systems to apply to a wide range of project types will help transportation agencies meet their delivery commitments in the most efficient way possible. CMGC has been used successfully by a growing number of transportation agencies nationally for selected projects to achieve specific project goals. Legislation should be introduced to provide CMGC authority as part of an overall effort to provide alternative delivery tools for all transportation agencies to use on transportation projects.[1]

[1] Reference Materials

- Innovative Procurement Practices (California Department of Transportation, May 9, 2007) http://www.dot.ca.gov/hq/oppd/contracting/InnovativeProcurementPractices.pdf
- Alternative Procurement Guide (California Department of Transportation, April 2008) http://www.dot.ca.gov/hq/oppd/contracting/AlternativeProcurementGuide.pdf
- Construction Manager-at-Risk Project Delivery for Highway Programs (National Academy of Sciences, 2010) http://onlinepubs.trb.org/onlinepubs/nchrp/nchrp_syn_402.pdf

Corridor Streamlining

Introduction

Corridor Streamlining involves corridor-level environmental analysis to facilitate and reduce the time needed for approval of subsequent actions (projects) to streamline project-level review.
This efficiency measure would allow an approval for a program of projects that meets broader transportation goals, address cumulative impacts, adopts early mitigation strategies and sets the stage for streamlined review and approval at the project level. Corridor Streamlining would allow for a range of applications by corridor, including those requiring heavy investments for system preservation (e.g., Highway 1 in Monterey County) and where intensification of land uses suggests fair share contributions to specific regionally significant projects (system management and expansion).

Corridor Streamlining would reduce time and expense associated with project level analysis and deliver projects to construction earlier. Currently, projects face long and expensive state and federal environmental reviews at the project level. Obtaining permits from regulatory agencies can also become a very long drawn out negotiation process, sometimes requiring expensive design changes and some of which are agreed to only as concessions to proceed, but may be questionable for what is appropriate. Regions with adopted Sustainable Communities Strategies (SCS) should receive benefits of approving developments consistent with the SCS and yet intensification of land uses can result in additional traffic impacts. Achieving agreement on how local development contributes to making improvements to the overall transportation system would improve the partnerships among the various owners/operators of the systems.

Having a CEQA/NEPA corridor/program analysis would provide the context for cumulative impact evaluation and identify specific practices and expectations for future projects to avoid, minimize and mitigate impacts. This could reduce the time needed for project-specific evaluation with regard to the development of appropriate mitigation strategies. Subsequent project reviews would focus on determining consistency with previously adopted plans/analysis, including the appropriate level mitigation as outlined in the program-level document. Corresponding regulatory permits could involve negotiation/issuance of general or master permits to accommodate a range of activities to be conducted with built-in assurances for monitoring and compliance. Relief of some regulatory requirements should also be considered for work that is conducted entirely within existing right-of-way

Application

The application of Corridor Streamlining could be made at several levels, but may be most appropriately focused at the State, regional or local level for evaluation of corridor needs (which could be either local or state-owned.)

Yield Potential

There is a medium potential for savings and a high potential for accelerated project delivery, with its own associated savings of state and local resources. There would be an initial outlay for corridor-level analysis but long-term savings is expected at the project level of analysis. A pilot should be conducted on two to three transportation corridors representing different applications. A rough estimate for a corridor-level analysis in a rural corridor is $3 million. Projected savings would occur as the support costs for project-specific analyses. In the 10-year timeframe, there is potential to see a minimum of a 50% reduction in support costs for SHOPP projects in a rural corridor and potentially higher in an urban setting focusing on operational type improvements.

Pros	Cons
Corridor Streamlining: • Provides an up-front consideration of larger objectives, recognition of cumulative impacts, and buy-in to a program of projects. • More certainty in the process of developing a project, reducing the potential for unexpected new requirements on individual projects.	*Corridor Streamlining:* • Funding the initial outlay for the corridor-level analysis, savings would be realized in 5-10 years. • Resource and regulatory agencies would be required to change their business practices; however this change is reasonable as it represents overall efficiency in government without changing stewardship responsibilities.

Accomplishments

1. Caltrans currently has agreements for conducting routine activities (Memoranda of Understanding) with two regions of the California Department of Fish & Game covering four of the five counties in District 5. These work well for a limited set of activities that do not have significant impacts nor the potential to impact sensitive species. This saves both time and direct costs associated with negotiating individual permits.

2. Caltrans District 5 has also negotiated with the US Army Corps of Engineers for a Regional General Permit (RGP) for routine activities. This RGP works well for activities that do not meet the criteria to qualify for a Nationwide Permit and would otherwise be subject to an individual permit. The RGP saves time for acquiring individual projects.

3. Programmatic Biological Opinions are also used to adopt specific measures with projects to avoid and minimize effects to federally listed or threatened species within certain geographic areas.

4. SB-375 allows a special exemption for infill projects that are consistent with an adopted Sustainable Communities Strategy (SCS). Regions with adopted SCS plans are working with their local, member agencies to realize California Environmental Quality Act (CEQA streamlining benefits. The most basic type of exemption is for residential projects, or mixed-use developments that are at least 75% residential. These projects do not have to:
   - analyze GHG emissions for cars and light trucks
   - analyze cumulative impacts on the regional transportation network
   - analyze lower density alternatives

   Projects that also fall within ½ mile of frequent transit and have a proposed density of at Least 20 units per acre are considered “Transit Priority Projects” and are eligible for additional CEQA streamlining:
   - if there are pre-established traffic mitigations for the area – which may include requirements for the installation of traffic control improvements, street or road improvements, transit passes for future residents, or other measures that will avoid or mitigate the traffic impacts of transit priority projects – the project cannot be required to do more than its share of mitigations.
   - a total CEQA exemption is possible for very select projects that are no bigger than eight acres or 200 units and that meet a number of other provisions on issues such as affordability, open space, and historic preservation.

5. Throughout Monterey County, local jurisdictions have adopted a Regional Impact Fee program to collect funds toward a definitive set of transportation improvements to offset cumulative impacts of development. The fees are calculated based on the nature and intensity of the proposed development within four sub-regions of the county. (Note that project-specific impacts are still handled on a case-by-case basis; for example, left-turn channelization into a development may be required for safe ingress/egress and the fee is collected as a contribution to a regionally significant transportation project in the area thereby offsetting its cumulative impacts.)

6. In the Sacramento region, Inter-Jurisdictional Agreements (IJA) have been started between Caltrans and local agencies to meet the Transportation/Traffic CEQA mitigation requirements for present and future specific plans and development. In addition to mitigating local development impacts, inter-jurisdictional impacts may be mitigated to meet regional Blueprint and Sustainable Community Strategy (SCS) goals/objectives and benefit the general public while facilitating the processing of development project applications.

Implementation

Implementation requires several levels of agreement among state and federal agencies as well as resource and regulatory agencies. It would likely also require changes in laws and regulations.

1. Period to implement – Next 2 years for a pilot and 5-10 years for adoption.
2. Costs would be estimated to conduct a pilot effort; subsequent cost estimates for implementation would be developed within the pilot.
3. Acceptance of the concept from the FHWA and at least several regulatory agencies would be needed before proceeding.

Conclusion/Recommendation

Streamlining at the corridor level leads to better coordination of transportation/land use planning (i.e. regional SCS plans that place greater emphasis on maintaining the existing system and operation improvements before capacity increases) and greater efficiency at all levels of government.

Reference Materials

1. MAP-21 Section 1310 INTEGRATION OF PLANNING AND ENVIRONMENTAL REVIEW

Design-at-Risk

Introduction

Design-at-Risk is the art of accelerating design to near completion, including development of draft bid documents, prior to project approval.

Preliminary and continuing conceptual design is progressed concurrently with the environmental clearance and project approval process so that bid documents can be issued for advertisement soon after project approval and when Right-Of-Way certification is obtained. For projects with Right-Of-Way requirements, acquisition activities can begin immediately after project approval and are not affected or changed by the design process since design is complete.

Design-at-Risk can proceed and the design concept progress with little or no impact to the environmental process since the proposed improvements are normally contained within existing Right-Of-Way and design addresses environmental impacts for a single alternative. If an environmental impact is identified during the design process, the appropriate mitigation can be incorporated directly into the design under the direction of the environmental team. Conversely, by beginning design early the designer has the opportunity to avoid or minimize impacts as they are discovered rather than design around them once they are locked in. This in turn results in a more efficient environmental process and cost effective design.

One of the major delays to the highway process is the completion of the draft PR and traffic operations reports. These both must be approved prior to the circulation of the environmental document. The approval process for the two documents can take many months, holding up the environmental review. For single preferred alternative projects, the design can continue even if the environmental document is under review, since the outcome of the environmental review will not change the details of the design. This is the key reason that Design-At-Risk is so effective for the appropriate project type. The environmental process in these instances is a “Go-or-No-Go” process and local elected officials will know if they have a mandate to move forward with a particular project. Therefore this process enables officials to safely decide whether using the funds and continuing with “conceptual design” is a high or low risk .

Yield Potential

Savings from this efficiency measure is high in both time and cost savings. The project development capital-outlay-support costs can be reduced by as much as 25 to 30%. Time required to implement the selected project can be reduced by as much as 50%. Time savings can be further increased by the local agency performing advertisement, award and administration of construction.

Final approval of a project design can be accomplished at completion of the design reducing the level of detail for reviews at intermediate review milestones of 35%, 65% and 95%. An early construction packaging plan is the single most critical element of Design-At-Risk. Subsequently, at final design approval, the owner/operator can utilize the tool of encroachment permit exceptions to incorporate any important safety features or maintenance concerns into the project during construction by change order, enabling the project construction to begin on schedule.

Using a $100 million total project hypothetical value, savings in project development/capital outlay support could be as much as $10 million. The savings over a 10 year period would be a function of the

number of projects being implemented during that period. Over a 10 year period, twice as many projects could be delivered based on time savings. The projected amount of time savings using Design-at-Risk is easily 50% based on the experience of the 1996 Santa Clara County Measure B program. 30% of the normal capital outlay support costs.

The Design-At-Risk approach for the right project type provides a number of benefits including:

- Faster project delivery: By a factor of half
- Time certainty, which reduces project development capital outlay support costs by as much as 30%
- Risk is reduced by reduction of redesign instances caused by changes in the environmental process after an environmental document has been approved and where the design process takes several years to complete. Redesign due to Right-Of-Way impacts causing changes to the design are reduced by concurrent design and the draft Right-Of-Way certification process implemented during that concurrent period. Project elements such as construction staging are developed earlier so that construction Right-Of-Way impacts for temporary construction easements are identified earlier, further reducing redesign and potential construction delay claims.

Use/Restrictions

For certain projects, the use of Design-at-Risk should be implemented at all levels as an alternative delivery method for transportation projects. The project type best suited for a successful outcome is one that doesn't influence the outcome of the environmental clearance and project approval process and that has broad support from stakeholders. This type of project typically involves a single alternative, no Right-Of-Way or environmental mitigation requirements, where design details are unlikely to change substantially as a result of the environmental process. There is a certain amount of risk associated with spending funds on design if the implementing agency has not committed to implement a project, which may happen even when there is a single preferred alternative; this risk is minimized by using design-at-risk on projects that are supported by affected stakeholders.

Suitable candidate highway projects include:

- ✓ Lane conversion (i.e. HOV and Express) of existing highways
- ✓ Existing interchange modifications
- ✓ Minor improvements to the existing highway system including "Gap Closure" projects

Suitable candidate transit projects include:

- System Completion Projects where a spur or a station has already been approved in a master plan but is just awaiting funding to be implemented/completed.

Highway projects that would be unsuitable for Design-at-Risk are, for example, a new highway alignment (or bypass) or new interchange where Right-Of-Way acquisition would be required and/or multiple alternatives need to be studied to obtain environmental clearance and project approval. Alignment changes would change much of the design details.

Transit projects that would be unsuitable for Design-At-Risk are, for example, any new construction transit lines with multiple alternatives. Stations need to be approved and established by the public process before final design funds can be expended.
Transit projects have a different process than highway projects, with the environmental process beginning at the 10% design level. There are not as many opportunities for transit projects to utilize

Design-At-Risk. The same guidelines can apply to transit projects but for transit, single alternative projects are less common, as are 100% locally funded local transit projects.

State environmental law would apply to all discretionary projects in California. Federal law would apply to projects on the Interstate system, particularly if there is a change in access and/or design exceptions. In District 4, the federal approval has been delegated to Caltrans. Federal law has allowed the limited use of progressing design prior to the completion of the environmental document. Typically in the federal arena preliminary design can be progressed to the 35% level.

State law allows for Design-at-Risk authority for preliminary engineering, although preliminary or "conceptual engineering" can be more than 35% to as high as 95% and preparation of draft bid documents. As a practical matter, the state doesn't progress state-funded design much past the 35% level without the record of decision in order to safeguard unnecessary expenditure of public funds.

While state law requires certain environmental and other milestones be met prior to advertising and awarding a construction contract, there is no prohibition on advancing design. Applicable law as it applies to Caltrans- Public Contract Code Section 10120 requires that Caltrans prepare full, complete, and accurate plans, specifications, and estimates of cost <u>before entering into a contract</u> for a project. In addition, the Supreme Court's Spearin Doctrine requires Caltrans, as the owner-operator, to give an implied warranty that the plans and specifications will be adequate to carry out the project if the contractor complies with the plans and specifications. Consequently, the construction project must comply with Caltrans' Right-Of-Way, environmental, design, and the Federal Highway Administration's (FHWA) standards. Advertisement of a construction project is constrained until these requirements are met. Caltrans is delegated the FHWA approval authority for Federal Projects so this would apply to federally funded projects as well. As stated above for state projects, however it is unlikely that Caltrans would proceed much past 35% preliminary design prior to completion of the Environmental Document, if state or federal funds were at risk. Local jurisdictions have much more discretion in proceeding with higher levels of design when utilizing local funding with the approval of local elected officials.

Local agencies such as Self-Help Counties and MTC/BATA have at times implemented Design-at-Risk. Local agency's elected officials are more inclined to progress design on an At-Risk basis, because they're closer to the issues, which tends to reduce the risk of a project in their jurisdiction from moving forward. Therefore, Design-at-Risk as an efficiency measure is most commonly implemented to the maximum extent possible for suitable local projects by local agencies. The Santa Clara County Measure B Highway program was successfully completed in its entirety using Design-at-Risk. When local funds are used, the design for a low risk project, for example, one with only one preferred alternative, can be progressed nearly to completion. All Right-Of-Way and utility relocation issues can be identified, and draft bid documents prepared in advance of project approval. However, execution of Right-of-Way acquisition and clearance activities would have to wait until after completion of the environmental process. Accordingly, projects such as some widening projects within existing Right-Of-Way are excellent Design-at-Risk candidates, since there are no post-design/environmental Right-Of-Way activities. On the Measure B highway program in Santa Clara County, many projects had final design and environmental completed within two years and construction completed within 18 months (3½ to 4 years from the start of project development to ribbon cutting as compared to traditional project timelines of as much as 7 to 8 years or longer.)

<u>Accomplishments</u>

The 1996 Santa Clara County Measure B Highway Program was completed in 5 years from the start of the environmental phase to ribbon cutting for the last project. The program included the I-880/Coleman Interchange Project in San Jose. Project initiation, environmental planning and final design were performed concurrently and were completed in 30 months. This award-winning project reconstructed the interchange, widened and realigned a mile of city arterial, and improved freeway access, including a new tunnel with direct access from San Jose Airport. All private property takes were eliminated. The majority of design exceptions were eliminated by geometric refinements. All environmental impacts were reduced to an insignificant level, public and agency consensus was reached and CEQA approval of the EIR was obtained within 17 months. A total of 740 plan sheets and a full range of technical studies were prepared. The Engineer's Estimate was within 0.1 percent of the lowest bidder. Advertisement, award and administration of the construction phase was performed by the VTA and construction was completed in two years. (See 2005 Design-At-Risk Presentation made to the Self Help Counties Coalition Focus on the Future conference. These projects were implemented between 2001 and 2008.
As part of the Strategic Plan for FasTrak® Electronic Toll Collection, BATA toll plaza improvements at the seven state-owned bridges were completed in six months for environmental and design and six months for construction. Signing striping, and electrical ITS system improvements were developed to promote increased FasTrak® usage at the toll plazas. Four separate construction packages were developed in parallel with a PSR/PR and CE/CE documentation for the PA&ED process. A total of over 500 plan sheets were prepared and separate bid packages prepared for early procurement of materials including sign structures and sign panels. Advertisement, award and administration of the construction phase was performed by BATA and construction was completed in six months. The BATA fasTrak Toll Plaza improvement project was implemented in 2006 and 2007.

Implementation

Choosing the appropriate project is essential in implementing Design-at-Risk. Well planned implementation of Design-At-Risk with appropriate QC is effective and results in savings in time and money. The effort to utilize Design-At-Risk is low, as it streamlines the review times and effort during the project development process. The Design-At-Risk tool can be immediately implemented on any project that it is selected for. There is no special action required at any level with regard to federal, state and local levels. Policy recommendations should include the step-by-step responsibilities for planning and execution by all parties, resulting in quality timely design products. The effort is similar for one or multiple projects. For a large highway program, such as the Santa Clara County Measure B Program, the effort is low spread over all the projects.

The steps needed to implement projects utilizing Design-at-Risk are:
1. Identify candidate projects
2. Assemble a design team that will utilize Local Assistance Procedures for Caltrans "oversight" of a project
3. Establish the deliverables schedule with date certain submittals to be met.
4. Develop the QC program that will assure that submittals to Caltrans will be of high quality prior to deliverables submittal.
5. Hold frequent (possibly weekly) PDT meetings with action item list for all team members
6. Proceed concurrently with conceptual design and the environmental document process
7. Upon issuance of environmental document, verify if any At-Risk design assumptions necessitate bid document revisions

Conclusion

Current law appropriately allows for Design-At-Risk, but it is not fully utilized and changes/clarifications in the project development guidelines would help make better use of the Design-at-Risk efficiency. Caltrans' local assistance guidelines allow for design-at-risk but would be more effective if they specifically identify this as an acceptable efficiency measure for suitable projects. The decision process to select the Design-At-Risk efficiency tool is a matter of the risk assessment process. The low risk projects will usually be locally funded and approved by local elected officials for single alternative projects that save time and money from At-Risk design. Design-At-Risk takes full advantage of local assistance procedures. The key is meeting agreed review time frames for deliverables and weekly PDT meetings and close cooperation and teamwork to deliver to the accelerated schedule. High quality of the deliverable is also key. Caltrans is performing an oversight role in Design-At-Risk, not a detailed review, so internal QC by the design team prior to deadline submittals to Caltrans oversight review must be prepared carefully and effectively by the local project design team. Subsequently, using the final encroachment permit process to protect the state's interest will make sure that all state design standards are adhered to and included in the design plans. If a local jurisdiction implements AAA for construction and some project elements need to be added or modified after contract award per terms of the encroachment permit, a change order can be issued.

References

Need links to the 2005 Focus on The Future presentation PowerPoint for the 1996 Santa Clara County Measure B Transportation Improvement Plan.

Design-Build

Introduction

Transportation projects are delivered primarily using the design-bid-build process. In this process, the transportation agency completes a design, advertises the project, and awards the construction contract to the lowest bidder. The design-bid-build delivery method has the advantages of being well established, widely understood and clearly defining roles for the parties involved. It also gives the transportation agency significant control over the end product since the transportation agency produces the design and conducts extensive inspection of construction. While this process works well for the vast majority of projects, it has distinct disadvantages such as lengthy delivery time, uncertain final project costs, claims exposure, and adversarial relationships between the transportation agency and its contractor.

Design-build is a project delivery method involving a single contract between the transportation agency and a design-builder covering both the final design and construction of a transportation project. The design-builder furnishes the project design based on a scope of work and technical requirements specified in contract documents developed by the transportation agency. The design-builder is also responsible for construction of the project and therefore has responsibility for all coordination between design and construction. Since the designer and builder are part of the same team, they have an incentive to work cooperatively to save both time and money.

Design-build is permitted for private projects in all 50 states, is widely used throughout the nation for private projects, and is the fastest growing project delivery method in the United States. In 1996, design-build represented 18 percent of the total construction market (Design-Build Institute of America 1996). The market has experienced nearly 300 percent growth since 1986 (DBIA). Design-build is being used by more than half of the state highway departments of transportation in the U.S. and is the fastest growing project delivery method in both the public and private construction sectors. When compared to the traditional design-bid-build method of delivery, design-build has documented benefits of faster delivery, better cost containment and cost certainty, increased innovation, and a wider range of risk allocation alternatives.

Every project has its own set of goals, challenges and risks. No project delivery system is right for all types of projects. Having a variety of delivery systems to apply to a wide range of project types will help transportation agencies meet their delivery commitments in the most efficient way possible. Choosing the right delivery system depends on the specific facts and conditions for the project. Relying solely on one project procurement method effectively eliminates an integrated approach to design and construction, and any chance of delivering public works projects in the most cost efficient and timely manner possible. Design-build has been used successfully by a growing number of transportation agencies for selected projects to achieve specific project goals.

Yield Potential

The design-build approach provides a number of benefits including:

- Faster Delivery -- Several studies have shown that projects can be delivered up to 30 percent faster using design-build. These same studies show that construction times are reduced by about 12 percent resulting in less impact to the traveling public.
- Cost Containment and Cost Certainty -- Design-build contracts are typically awarded on a lump sum, fixed-price basis. This provides limited opportunities for cost growth during the contract and greater certainty for the Department regarding the total project cost. Several studies have shown

that cost growth is significantly less on design-build projects than design-bid-build projects. One study by the University of Pennsylvania found that cost growth for design-build projects was 2.4 percent versus a 4.8 percent cost growth for projects delivered by design-bid-build.

- Innovation -- Design-build also provides a greater potential for innovation in design, materials and construction methods. Design-build projects typically use performance specifications and allow the contractor to select materials and construction methods. This provides an incentive for the contractor to be innovative. In addition, design-build allows the designer and builder to work closely to take advantage of their individual strengths
- Risk Allocation -- In return for providing the contractor with more control over the project, the contractor accepts greater responsibility for managing risks. The risks are minimized by allocating it to the party who has the greatest ability to control it

Use/Restrictions

The use of design-build should be implemented at all levels as an alternative delivery method for transportation projects. Federal law has allowed the use of design-build for federal aid projects since 1996. State law provides design-build authority for specified local agencies (generally for transit and non-highway projects). Caltrans currently has authority for up to ten projects as part of the Design-Build Demonstration Program implemented by passage of Senate Bill 4 in 2009. Eight of the authorized ten projects have been delivered and the remaining authority expires on January 1, 2014.

Implementation

Section 1307 (f) of TEA-21 required that a comprehensive national study be conducted to evaluate the effectiveness of design-build contracting, with the results subsequently reported to Congress. The study focused on completed design-build projects authorized under Special Experimental Program 14 (SEP-14). Its findings and conclusions were based on the results of an extensive literature search, interviews with key stakeholders involved in the Federal-aid highway program and SEP-14, and an integrated set of surveys of transportation agency personnel responsible for design-build programs and projects developed under SEP-14. This “Design-Build Effectiveness Study” developed for the Federal Highway Administration in January 2006 and submitted to Congress found that design-build project delivery:

- Reduced the overall duration of projects by 14 percent;
- Reduced the total cost of the projects by 3 percent; and
- Maintained the same level of quality as compared to design-bid-build project delivery.

Caltrans was successful in obtaining authorization to pilot the design-build method of delivery in 2009. Caltrans has now awarded eight of the ten design-build projects authorized by Senate Bill (X2) 4. All eight of the projects were awarded faster using design-build than the proposed design-bid-build schedule. Several projects were awarded 18 or more months faster. All but one project were awarded for less that the engineer’s estimate. In many cases, this was due to innovations by the design-build teams through the Alternative Technical Concept (ATC) process. On the eight projects awarded to date in the Demonstration Program, Caltrans has experienced more than $140 million in cost savings through the ATC process. This represents a 12.6 percent savings on project costs using design-build.

Pros	Cons
Implementation of Design-Build: • *Based on what appears to be a successful demonstration program by Caltrans, design-build authority should be pursued as an efficiency measure for delivery of transportation projects. There appears to be significant momentum due to the success of the demonstration program which should be built upon to gain design-build authority for all transportation agencies.*	*Implementation of Design-Build:* • There are some cost and schedule impacts to implementing a new delivery method

Conclusion

Pursuit of design-build authority will require a concerted effort by all transportation agencies as there are still several organizations which oppose this method. The costs and effort of implementation should be fairly small due to the momentum developed by the demonstration program. Pursuit of design-build authority should be part of a larger effort to acquire a variety of project delivery methods including Construction Manager/General Contractor in order to assist in the efficient delivery of transportation programs.

No project delivery system is right for all types of projects. Having a variety of delivery systems to apply to a wide range of project types will help transportation agencies meet their delivery commitments in the most efficient way possible. Design-build has been used successfully by a growing number of transportation agencies for selected projects to achieve specific project goals. Legislation should be introduced to provide design-build authority as part of an overall effort to provide alternative delivery tools for all transportation agencies to use on transportation projects.

Focusing Federal Dollars

Introduction

Agencies using federal funds on transportation projects must meet certain requirements imposed by the federal government. These include completing environmental review/documentation complying with the National Environmental Policy Act (NEPA) and federal deadlines for obligation, invoicing, and close out. These additional processes, deadlines, and requirements consume agency resources, including staff time and funding.

Data suggests that agencies can realize savings of up to 20% of support costs if an agency can avoid the federal process altogether. This efficiency proposal encourages state, regional, and local agencies to focus federal funding on fewer projects, thereby allowing more flexible non-federal funds to be spent on smaller projects. These smaller projects can garner the most cost savings by avoiding federal environmental regulations and deadlines. Smaller agencies are also not as well equipped as larger agencies in meeting onerous federal invoicing and reporting requirements. The fewer resources agencies must spend on delivering federal projects, the more resources can be committed to new projects.

Projects of any mode or purpose can benefit from this efficiency measure, since concentrating federal funds on larger and fewer projects will ultimately save funding which can be used to further improve the transportation infrastructure network.

Application

All levels of government (state, regional, and local) can choose to focus federal dollars on a few large projects, thereby freeing up local funds which can be used for smaller projects. Federal processes and environmental regulations can greatly hinder delivery and increase costs of smaller projects.

Accomplishments

- The State of California already offers an exchange program for Regional Surface Transportation Program (RSTP) funds in rural areas, where smaller regions receive state cash instead of federal STP funds. Smaller agencies benefit greatly from this exchange, as they receive so little STP funds that it is inefficient to federalize projects in order to spend a few thousand dollars in federal funds.
- Many urban areas with sales tax measures actively focus federal funds on large, usually highway projects, which frees up local sales tax measure funds for use on smaller projects. In San Diego, SANDAG focused ARRA funds in this way. In the Bay Area, MTC has programmed new federal funds on large highway projects that were fully funded, freeing up state or local funds for high priority smaller projects.

Yield Potential

This efficiency measure offers a high benefit/potential for savings. Focusing federal dollars assumes that projects are funded with multiple sources of funding, and agencies have sufficient local/flexible funding to be able to shift from larger projects. For instance, an agency without access to local sales tax funding may not have the flexibility to move funding between projects. Also, this would represent a fundamental shift in the way most projects are funded: usually, a project has multiple colors of money. Focusing federal funding on a select few projects may not be feasible in all situations. Further, a statewide program may be difficult in years when the State lacks state-only funding (such as now, when almost all

of limited state-only funds are being used by the Department to fund its operations, and federal funds are being used with a 0% match rate with toll credits).

Using the MAP-21 apportionment figures for FY 12-13 for the STP, HSIP, and CMAQ programs, and assuming 90% OA rate, 83% of STP allocated going to self-help counties, 25% of funding going to smaller projects (figure up for discussion), with one-third of project costs for support and a 15% support costs savings rate, the annual savings is estimated at $14 million. Over ten years, the project savings could be $140 million. The potential savings could be from any mode and purpose, although most federal aid projects are for local road and state highway maintenance.

Pros	Cons
Focusing Federal Dollars: • A number of local and regional agencies are already exchanging federal funds for other flexible funds; the State already has an RSTP exchange program. • The proposed "bank" would have broad support from regional and local agencies. • Provides benefits to both the State and local/regional agencies as federal funds can be exchanged across regional boundaries and the State is able to demonstrate more efficient use of funds.	*Focusing Federal Dollars:* • Additional resources may be needed for Caltrans to manage the statewide program. • There is risk of committed costs with no project benefit.

Implementation

Creating a "bank" at the state level could include medium/high difficulty in identifying state funds to create the bank. Sustaining the bank once started could be considered a low effort. On the regional and local levels it would only take a medium effort to work amongst agencies to identify when federal funds could be focused on smaller projects for the benefit of the countywide area, region, and even statewide. Period for implementation is short-term (2 years or less). Regional and local agencies can begin the work of exchanging funds at any time. Implementation period is short term for a state bank as well. The State and transportation stakeholders should begin to identify possible fund sources for the bank and work with the Legislature and Governor to implement immediately.

There would be some costs to the State in staff time to develop and maintain the proposed "bank." State transportation stakeholders should begin work to identify what is required to create a state bank to assist with focusing federal funds. This work should include how much staff time and resources would be necessary at the state level as well as how much money is necessary to get the bank started. At the regional and local level, MPOs/RTPAs and counties and cities need to meet in the own areas and use forums such as the RTPA Group, CSAC, the League, and CalCOG to discuss swapping funds between regions, and identifying flexible funding sources for the "bank."

Conclusion/Recommendation

In order to maximize the effectiveness of focusing federal dollars, the State, regional agencies, and counties and cities need access to non-federal cash. At the state level, this means creating a "bank" in which federal funds can be swapped with state or local funds in order to put federal dollars on as few of large projects as possible. The State would coordinate and manage the bank allowing the State, regional

agencies, and counties and cities the ability to exchange federal funds for state or local funds to ensure smaller projects are not federalized but also allowing various agencies to swap state or local funds for federal funds should they have a large federalized project that can use additional federal funds without adding the approximately 20% in additional support costs associated with federal dollars. Further, at the regional and local levels, regional agencies and counties and cities in their own region, but across the state too, should work together to exchange funds when possible to minimize the number of federalized projects and ensuring cost savings from a statewide perspective. Should California generate new revenues for transportation, a portion of those funds could be used to start the bank.

ACTION: Establish a "Bank" or exchange where agencies can swap out federal funding. This can be done now in areas with local funding. On a statewide basis, this will require more state funding. Swapping out federal funds can reduce overall costs by around 5%.

Reference Materials

1. Identify the organizations that have supported and/or opposed, as applicable
2. Include links to documentation for reference, as applicable.
   - OCTA: Breaking Down Barriers.
     - http://www.octa.net/pdf/110810/barriers.pdf
     - http://atb.octa.net/agendapdfsite/8948_Attachment%20A.pdf

Project Acceleration Toolbox

Introduction

The California Department of Transportation (Department) has maintained the Project Delivery Acceleration Toolbox since 2002. This document is a comprehensive report listing the Department's efforts (past and present) to accelerate the delivery of transportation projects. This document also identifies proposed tools for the Department to implement over the next few years. The toolbox identifies 169 improvements to the project delivery process. This document is updated regularly to reflect the most current and continuing improvement efforts of the Department. The purpose of this document is to provide the Department's employees, as well as its external partners, valuable tools to accelerate project delivery. The Toolbox is on the Department's Project Delivery website: http://www.dot.ca.gov/hq/oppd/projaccel/index.htm.

Yield Potential

Some of the successful acceleration techniques contained in the Project Delivery Acceleration Toolbox are the following:

- ✓ NEPA Delegation
- ✓ Project Agreement Construction Tool (PACT)
- ✓ Cost + Time (A+B) Contracting
- ✓ Programmatic Agreements Construction Partnering
- ✓ Permit Engineering Evaluation Report (PEER)
- ✓ Incentives/Disincentives
- ✓ Smart (Flexible) Start

NEPA Delegation

Effective July 1, 2007, Caltrans assumed all of FHWA's responsibilities under NEPA for projects on the State Highway System. The median time to complete environmental approval has been reduced by over one year.

Permit Engineering Evaluation Report (PEER)

Since 2007, projects funded by others that have fewer risks and cost between $1 million and $3 million can follow an expedited process which eliminates the need for the Project Study Report, Project Report and Cooperative Agreement. This is expected to speed delivery, reduce cost, and encourage investment in the state highway system by local agencies.

Project Agreement Construction Tool (PACT)

This tool provides an opportunity for a well-prepared Project Development Team to get a Cooperative Agreement written in a single meeting. Signature authority for pre-approved PACT agreements has been delegated to the District Directors. This has resulted in over 80 percent of cooperative agreements being approved within 60 days.

Programmatic Agreements

Programmatic Agreements have been developed with several regulatory agencies. These agreements specify study protocols and/or mitigation methodologies. While these agreements require substantial effort initially, they provide the potential to substantially streamline future project level consultations. Examples of Programmatic Agreement that have been put in place include the Department's 106 agreement with the State Historic Preservation Officer and Programmatic Biological Opinions with the

U.S. fish and Wildlife Service for Valley Elderberry Longhorn Beetle, Coastal Red-legged Frog, San Joaquin Kit Fox, Giant Garter Snake and the Desert Tortoise.

Cost + Time (A+B) Contracting

Cost-Plus-Time Bidding uses a cost parameter (A) and a time parameter (B) to determine a bid value. The total bid value (A+B) is used only to evaluate and rank bids. The contract amount is based on the bid price (A), not the total bid value. The number of days bid (B) becomes the contract time.

Results from 25 projects awarded during a recent study period (2007)

- 2900 days saved (out of 9700) – 30%
- $1.1 million in added cost to contracts – because the low bidder does not always win the contract
- *$42 million in Road User Costs saved – this is based on the reduced number of working days multiplied by the delay costs to road users.*

Incentives/Disincentives

This method provides a monetary incentive to a contractor for meeting a critical completion date. A contractor earns an incentive for each day that it is able to beat the completion date required by the contract or a disincentive for each day that it exceeds the completion date required by the contract. This method is used primarily when a project must be completed by some critical date.

Smart (Flexible) Start

This method specifies the number of working days and the final working day for a construction project. The contractor is allowed to select the first day of work within those parameters. This provides flexibility for the contractor and allows it to coordinate limited crews and equipment for multiple projects more efficiently. These efficiencies should result in lower bids and reduced construction time.

Use/Restrictions

Most project acceleration techniques are applicable for use at the federal, state, regional and local level.

Implementation

Many of the tools in the Project Delivery Acceleration Toolbox can be implemented immediately. Others (need to specify which ones) may require legislation which could take more effort and time.

Pros	Cons
Implementation of Project Delivery Acceleration Toolbox: • Many of the project delivery acceleration toolbox methods have been used successfully on transportation projects. • Most methods do not require legislative action to implement.	*Implementation of Project Delivery Acceleration Toolbox:* • Some project delivery acceleration toolbox methods are not available for use by all agencies.

Conclusion

The Project Delivery Acceleration Toolbox is a compilation of all methods used and being developed to accelerate the delivery of transportation projects. The existence of the toolbox needs to be more widely known so that all agencies can benefit from these methods.

Public Private Partnerships (P3s)

Introduction

Public agencies throughout the nation are currently analyzing and seeking alternative options for meeting transportation investment needs, including public-private-partnerships (P3s). P3s are contractual agreements formed between a public agency and a private sector entity that allow for greater private sector participation in the delivery and financing of transportation projects. There are many different types of P3 models and degrees to which the private sector assumes responsibility. Additionally, different types of P3s may be more applicable for development of new facilities while others may be more suitable for the operation or expansion of existing assets. For the purpose of this report, the discussion will focus on P3s involving private partners to finance, construct, operate and maintain new highway capacity as well as recent utilization of availability payment models.

Under a concession delivery model, a public agency would award a long-term contract to a private firm or consortium of firms to design, build, finance, operate and maintain a revenue generating project (e.g., a tolled road) for a specific term. The benefits of the concession model include full life-cycle costing which transfers operations and maintenance cost risks to the private sector and creates incentives for the private sector to make tradeoffs between higher upfront capital costs and lower long-term operations and maintenance costs. Adding the financing element to this model means that in the best case, the public agency would not be financially liable for the project and it would be up to the private sector to raise the necessary funds, manage the construction and assume the traffic and revenue risk on the project.

Under an “availability payment” P3 project structure, the public agency would contract with a private sector partner to design, construct, operate, and/or maintain a highway for a contracted period of time. Availability payments are often used for highway projects that are not expected to generate adequate revenues to pay for their own construction and operation, either because the highway is not tolled, or the tolls are not forecast to generate sufficient income. This requires that the public agency have sufficient and credible non-toll sources of funding to make all required availability payments. Under availability payment structures, the public agency generally retains the revenue risk rather than the private partner.

Availability payments may be structured in a variety of ways. In certain cases, no payments may be made until after construction is complete. Alternatively payments may be predicated on particular construction milestones. Project sponsors may also define how the periodic payments are to be made, and may also set a maximum payment cap based on agreed-to operating and maintenance performance standards.

Availability payments have been used extensively in Canada, Europe, and Australia, but are just beginning to gain interest in the United States. The Presidio Parkway P3 project in San Francisco is using an availability payment structure, incorporating construction milestones and ongoing availability payments. It is the first transportation P3 in California under the recently enacted P3 statute, Streets and Highways Code Section 143.

Yield Potential

Ultimately, revenue to pay for a P3 project will need to be generated from the public (e.g., tolls, taxes, or other user-fees). Private entities contribute resources with the expectation of being repaid with a market-appropriate profit. When P3s are successful, the private partner is able to make a profit while also generating benefits for the public sector that may not have been achievable otherwise. P3s have been of considerable interest to transportation agencies in recent years as they offer an opportunity to accelerate the delivery of much needed projects—raising the upfront capital necessary for construction.

Use/Restrictions

Although construction and long term preservation can cost less under a P3 model, transaction costs are usually much higher due to legal fees, financing costs, and procurement expenses. Generally, the higher transaction costs of P3s mean that the use of P3s is limited to mostly a small segment of transportation projects—typically large and complex projects with stable revenue streams.

Conclusion

P3s allow public agencies to leverage future revenue streams for up-front capital in the form of private investment. With such access to financial resources, P3s can accelerate project delivery. These arrangements, however, do not eliminate the need for additional transportation revenue.[1]

[1] Reference Materials

FHWA Office of Innovative Program Delivery
http://www.fhwa.dot.gov/ipd/p3/index.htm
http://www.fhwa.dot.gov/ipd/forum/

Quality Management (Previously known as Oversight)

Introduction

Caltrans has historically relied on inspections or reviews after certain milestones have been achieved to evaluate a project's quality. Conformance to standards and practices, and often individual preferences, has been the traditional definition of a project's quality. Consistent application of these standards and practices has been problematic given the various expertise and opinions of the product evaluator, the complexity of applying standards in differing contexts and the lack of a method to communicate project quality succinctly the way project cost and schedule can be. This efficiency measure proposes a definition of project quality based on stakeholder's expectations and referenced to standards and practices, a system to address the complexity and communicate project quality succinctly.

The proposed Quality Management System (QMS) uses twelve characteristics to represent a project's performance. Those characteristics are:

- *Protective Features*
- *Purpose and Need*
- *Cost Management*
- *Schedule Management*
- *Design Standards Compliance*
- *Right of Way Minimization and Compliance*
- *Environmental Commitments Minimization and Compliance*
- *Construction Contract Standards Compliance*
- *Constructability*
- *Designed to Operate as Planned*
- *Maintainability*
- *Optimization*

Each characteristic is owned by one or more stakeholders, represented by 11 functions. The functions have identified aspects which are parts of projects that represent the characteristic. The functions have created criteria for evaluating how well a project meets the characteristics. In the proposed QMS process the project team will use the aspects and criteria to evaluate how well the project meets the characteristics. They will do this on a frequency they determine based on the project schedule; it could be monthly, bi-monthly, or quarterly. The QMS process also proposes that ultimately a team of functional experts who are not part of the project team to evaluate the project using the same policy but their evaluation happens before major milestones are due. There are six major milestones: "PID Approval," "Draft PR&ED," "Final PA&ED," "30% PS&E," "60% PS&E," "90% PS&E."

Yield Potential

Caltrans expects time and resources savings once full implementation is achieved since reviews will be focus thereby needling less time and because of the methodical review of quality characteristics various policies can be rescinded.

Use/Restrictions

This proposal will apply to state highway system projects regardless of who sponsors the project. It does not require legislation at the federal or state level to implement.

Implementation

Caltrans has developed a draft deputy directive (DD) and PDPM manual change to implement the quality definition. Caltrans has developed an Evaluation Guide to provide direction on how to use the QMS policy on projects. Caltrans has decided to encourage use of this policy at the project team level before the DD is approved. So an on-line training class is under development. We expect it to be operational by November 30, 2012.

Period for Implementation: Less than 2 years

Actions Required for Implementation:

- *Transmit the Draft Design Product criteria Evaluation handbook to districts for use by November 30, 2012.*
- *Circulate for review and comment the draft deputy directive on design product quality for ultimate approval by March 1, 2013.*
- *Continue to work with districts to implement the QMS, using the handbook as requested by the districts.*
- *Develop a plan by June 2013 for full implementation of Department's QMS, including implementation on project developed by others.*

Pros	Cons
Implementation of QMS: • Having a statewide definition that provides the form and structure to evaluate, measure, and report on quality will provide a level playing field when analyzing how well projects are prepared.	*Implementation of QMS:* • Would require redirection of resources from districts to regional teams to perform Independent Quality Assurance (IQA) analysis while districts would maintain some IQA responsibilities like evaluating the Quality Assurance/Quality Control plans for projects.

Conclusion

By establishing these evaluation criteria, which are based on product outcomes, and referencing these criteria to the actual standards and practices, it is anticipated that a more consistent application of quality evaluation will be achieved.[1]

[1] Reference Materials

- *The policy thesis statement, Framework for Independent Quality Assurance for Design Products, is found at http://onramp.dot.ca.gov/hq/design/projdev/quality.php.*
- *Draft policy, PDPM change, and Evaluation Handbook can be found at http://onramp.dot.ca.gov/hq/design/projdev/pdt.php* on-line training will be added.

CEQA Reform Placeholder

Cross Regulation Reduction

Cross-Regulation Reduction

ACTION: Encourage the Governor and the Legislature to reduce cross-regulation by promoting "consistency determinations" or cross-delegations between permitting agencies.

Doing project delivery work in California is particularly complicated by cross-regulation.[1] Due to parallel state and federal laws and permitting agencies, and overlap between regulations, cross-regulation is common for many protected resources and simply drives up the cost of project delivery and resource protection. The cost of cross-permitting has not been calculated, but surely adds many $millions per year in administrative costs and project delays.

Cross-regulation can be reduced a number of ways: 1) "consistency determinations" [2] and 2) delegations or assignments. [3]

[1] For example, for wetlands impacts, a project proponent may need a permit from the Corps of Engineers under the Federal Clean Water Act, another from a Regional Water Quality Control Board under both the Federal Clean Water Act the California Porter-Cologne Act, from the California Department of Fish and Game under Section 1600, et seq, of the Fish and Game Code, and from both the US Fish and Wildlife Service and the California Department of Fish and Game under the Federal and State Endangered Species Acts, respectively, for impacts to wetlands habitat for endangered species. If the project is in the Coastal Zone, a permit from the Coastal Commission, a Local Coastal Plan administrator, or the Bay Conservation and Development Commission (BCDC) in the Bay Area is also needed. This approach, while ostensibly highly protective of wetlands, slows all projects from proceeding, including wetlands enhancements, and leaves responsibility for sustaining and improving wetlands fractured. Who is in charge of this important resource? It would be more efficient for project sponsors AND for wetlands preservation (in this case) for less cross-regulation.

[2] In some cases, parallel reviews can be minimized through tack-on "consistency determinations", such as is allowed under the California Endangered Species Act. This can be done in situations where a species is listed both under the Federal Endangered Species Act and the state act. In many cases, the US Fish and Wildlife Service or the National Marine Fisheries Service issues a "Biological Opinion" directing how an action can avoid "jeopardizing the continued existence" of a species. The California Department of Fish and Game then can simply concur with their parallel federal agency by issuing a "Consistency Determination" under Section 2080.1 of California Fish and Game Code. Although this is getting increasingly difficult due to differences between the two Acts and court decisions, this is an efficient way to manage endangered species impacts.

[3] "Delegations", where agencies, under their own authority grant authority to another agency, or "assignments", where legal authority is granted under law, are another way to avoid cross-regulation. For example, Caltrans is "delegated" authority for most minor cultural resource determinations by the California Office of Historic Preservation and the Federal Advisory Council on Historic Preservation. Under the delegation agreement, Caltrans must maintain "Professionally Qualified Staff", and must report and self-audit for annual review by the Office of Historic Preservation. This "Programmatic Agreement" has greatly reduced inter-agency paperwork and made cultural resources review more efficient and predictable.

Federal Act Recommendations

Looking ahead, it is critical that the next federal act address the infrastructure needs of California and the Nation. As reflected throughout this report, traditional approaches will not be successful in meeting future needs. Therefore, a united communication platform amongst all levels of government for informing the next federal act is necessary. This platform should address the need to (1) assure the financial integrity of the Highway and Transit Trust Funds, (2) stabilize revenues, (3) prepare the way for the transition to new methods of funding for stability and sustainability, (3) provides the means to ensure that transportation infrastructure is in a state of good repair, (4) establish goods movement as a national economic funding priority, (4) create a new federal program and funding source(s) dedicated to relieving growing congestion at America's global gateways, and (5) establish a continued, stable, and reliable long-term investment strategy.

Federal Delegation Expansion

Federal Delegation Expansion

ACTION: Encourage the Governor and the Legislature to reduce cross-regulation by promoting Federal delegations to State agencies. California should support the MAP-21 required Comptroller General analysis of allowing state requirements to substitute for federal. (Section 1322)

In general, state agencies should seek delegations or assignments of responsibilities from parallel federal agencies. This reduces the number of parties involved in decisions, can reduce paperwork, and makes one agency accountable, rather than two. There are examples of State agencies that have assignments or delegations from parallel Federal agencies. However, as a strategy, this has not been consistently pursued, because even though there are cost efficiencies to those seeking approvals or permits, there are additional costs to those agencies that take on the additional federal responsibilities.[1]

MAP-21 initiates an analysis of allowing equivalent state environmental requirements to substitute for federal. California has such equivalents and should aggressively support this analysis. It could lead to CEQA being substituted for NEPA, Porter-Cologne to substitute for the Clean Water Act, and the California Endangered Species Act to substitute for the Federal Endangered Species Act, etc. This would take changes in Federal law and probably state law.

[1] In the example of Caltrans' assignment of Federal Highway Administration (FHWA) environmental authority ("NEPA Delegation"), Caltrans and local agencies absorbed costs because of the cost benefits to their project delivery programs.

Local Control – Remove Barriers

Remove Barriers to Local Control of Regulation/Enforcement of Parking/Congestion Factors

Recognizing that each region faces different congestion, transit and parking environments, state regulatory changes may assist individual jurisdictions to address their own needs. Targeted legislative reforms are necessary to remove barriers to local regulation of parking and congestion factors.

The following examples are further detailed in Appendix I to this report and include:

- Allowing cities with preferential parking districts (PPD) to include congestion and transportation impact costs in the calculation of the residential parking permits.
- Working with statewide stakeholders during 2013 to make meaningful, near-term reforms to address disabled placard abuse. These reforms offer revenue generation and congestion alleviation potential.

Programmatic Expansion

<u>Use More Programmatic Approaches</u>

ACTION: Encourage the Governor and the Legislature to encourage pragmatic programmatic approaches.

When crafted well, programmatic approaches can create a context where regional or corridor issues are resolved at that level and do not have to be reexamined at the project level. Although requiring up-front funding, this can programmatically reduce costs.[1]

Programmatic approaches, however, can also backfire.[2] They need to be crafted to 1) avoid regulatory conflicts, and 2) to avoid danger to entire programs when an element fails.

[1] A number of "programmatic" approaches are built into state and federal law. For example, under the Federal Clean Air Act, some air pollutants are handled on an air basin basis. Transportation plans and programs are found to "conform" with the air quality plan and individual transportation projects that are in those plans and programs don't have to individually evaluate their contributions to ozone formation, for example. California adopted this airshed approach in how it deals with greenhouse gases. Certain infill projects in a metropolitan area with a "Sustainable Community Strategy" are excused from some CEQA effort.

[2] For example, even though both CEQA and NEPA allowed "tiered" environmental processes, these do not track with other regulatory requirements. Therefore they do not resolve major environmental issues well, and are rarely used. And where programmatic approaches are used, they also open whole programs or corridor solutions to challenge, as opposed to individual projects or actions. For example, when a metropolitan area loses its air quality "conformity" it can shut down most of its federal transportation funding until that issue is resolved.

State/Local Integration of NEPA Delegation

ACTION: Encourage better alignment between Caltrans NEPA QC/QA processes and local agency and consultant practices.

Currently, FHWA's environmental responsibilities can only be delegated to a statewide agency. [1] Therefore, this divides the environmental responsibility between the CEQA lead agency, which is often the local agency (although on the State Highway System is usually Caltrans), and Caltrans which is NEPA lead. This can be inefficient. However, if Federal law were changed to allow local agencies to be NEPA lead, the burden of the delegation would likely be similar to what Caltrans has assumed[2] which is also problematic.

There are alternatives to actual delegation or assignment of NEPA lead status:

1. Avoid federal funding or approvals, therefore avoiding federal environmental process entirely. (See the separate paper on this approach.)
2. With better alignment between Caltrans' document standards and review processes and local agency and consultant practices, local agencies could obtain most of the benefits of delegation.

Caltrans provides comprehensive guidance, annotated outlines, and templates online, to simplify and expedite the delivery of adequate environmental documents by local agencies and their consultants. Caltrans is investigating ways to coordinate with local agencies and consultants to standardize training and processes to further expedite document development and reviews.

[1] Caltrans is the only State DOT that has taken on near full authority. MAP-21 allows this to be extended to transit and rail projects, once regulations are promulgated and the state negotiates an agreement.

[2] Caltrans' assignment of FHWA environmental responsibilities required that it: 1) get special legislation passed in the California legislature to waive the state's sovereign immunity so that Caltrans could be sued in Federal court for its NEPA decisions, 2) Caltrans had to agree to a QA/QC process approved by FHWA, 3) Caltrans has to maintain competent environmental and legal staff, 4) Caltrans is subject to regular audits by FHWA, and 5) Caltrans must obey all written FHWA guidance and must consult on issues of national concern with FHWA. So even though "NEPA Delegation" has substantially reduced the time for Federal environmental process (by over a year), it is not without cost.