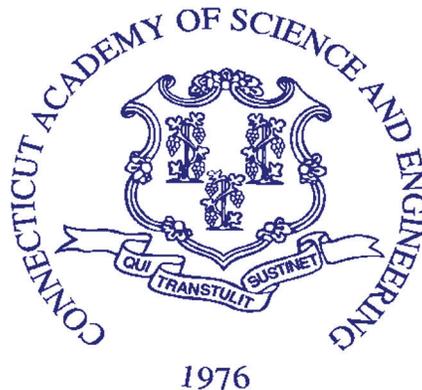


STRATEGIES FOR IMPROVING TRANSPORTATION PROJECT DELIVERY PERFORMANCE

SEPTEMBER 2016

A REPORT BY

THE CONNECTICUT
ACADEMY OF SCIENCE
AND ENGINEERING



FOR

THE
CONNECTICUT DEPARTMENT OF
TRANSPORTATION

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Richard H. Strauss
Executive Director

Disclaimer

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LIST OF ACRONYMS AND ABBREVIATIONS

§	Section
5DPM	5-Dimensional Project Management
AASHTO	American Association of State Highway and Transportation Officials
ACMs	Alternative Contracting Methods
AGC	Associated General Contractors of America
ATCs	Alternative Technical Concepts
BTC	Base Technical Concept
CGS	Colorado Department of Transportation
CEPA	Connecticut Environmental Protection Act
CMAR	Construction Manager-at-Risk
CM/GC	Construction Manager/General Contractor
CRE	Constructability Review and Estimating
CWA	Clean Water Act
D-B	Design-Build
DBB	Design-Bid-Build
DEEP	Connecticut Department of Energy and Environmental Protection
EA	Environmental Assessment
ECI	Early Contractor Involvement
EDC	Every Day Counts
EIS	Environmental Impact Statement
EPA	US Environmental Protection Agency
EPC	CTDOT Environmental Permit Coordination Unit
FAR	Federal Acquisition Regulation
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FMC	Flood Management Certification
GDOT	Georgia Department of Transportation
GMP	Guaranteed Maximum Price
ICE	Independent Cost Estimator
IDIQ	Indefinite Delivery/Indefinite Quantity
IWRD	DEEP Inland Water Resources Division
MassDOT	Massachusetts Department of Transportation
MnDOT	Minnesota Department of Transportation

MOU	Memorandum of Understanding
MTA	Maine Turnpike Authority
NCDOT	North Carolina Department of Transportation
NCHRP	National Cooperative Highway Research Program
NDDDB	National Diversity Data Base
NEPA	National Environmental Protection Act
NHDOT	New Hampshire Department of Transportation
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
OEP	CTDOT Office of Environmental Planning
OLISP	DEEP Office of Long Island Sound
OPM	Connecticut Office of Policy Management
PA	Programmatic Agreement
P3	Public Private Partnerships
PGP	Programmatic General Permit
PDM	Project Delivery Method
PBR	Permit By Rule
RFP	Request for Proposals
PNDF	Permit Need Determination Form
QA	Quality Assurance
QC	Quality Control
RFQ	Request for Qualifications
ROW	Rights-of-Way
TDOT	Tennessee Department of Transportation
UDOT	Utah Department of Transportation
USACE	US Army Corps of Engineers
U.S.C.	United States Code
USFWS	National Marine Fisheries Service
VDOT	Virginia Department of Transportation
VTrans	Vermont Transportation Agency
WQC	Water Quality Certifications
WQS	Water Quality Standards
WSDOT	Washington State Department of Transportation

EXECUTIVE SUMMARY

This study was conducted for CTDOT by the Connecticut Academy of Science and Engineering (CASE) to identify practices for improving transportation project delivery performance for the various contracting methods used by the Connecticut Department of Transportation (CTDOT) and other transportation agencies that are applicable for CTDOT's use.

BRIEF STATEMENT OF PRIMARY CONCLUSION

Nationwide, state DOTs are addressing challenges and complexities of an aging infrastructure, with many using alternative contracting methods (ACMs) and other strategies to improve project deliverability. CTDOT has undertaken several initiatives to improve project deliverability such as piloting ACMs and utilizing working groups to assess environmental review and permitting processes both internally and with environmental regulators. An overview of considerations to further CTDOT's efforts include the following:

- Leadership should articulate the department's vision and objectives for project delivery performance and continue to foster and improve internal relations to instill a shared production culture and team orientation among designers, engineers, environmental regulators and associated construction entities.
- To achieve the goals as set forth in the state's *Let's GO CT!: Connecticut's 5 Year Transportation Ramp-Up Plan* and *Let's GO CT!: Connecticut's Bold Vision for a Transportation Future*, it is expected that CTDOT and the Connecticut Department of Energy and Environmental Protection (DEEP) will require additional staffing and flexibility to engage consultants to fill staffing gaps, especially to meet short-term needs.
- Key project delivery performance measures should be established to monitor processes using data-driven analysis to identify areas for improvement, and to justify needed funding and staffing levels to effectively implement CTDOT's capital project program. It is expected that the department's experience with ACMs may result in examination of and changes to other existing project delivery practices. This assessment process should be open and transparent to all stakeholders to provide awareness of, and public support for, efforts to improve project deliverability.
- A useful strategy for improving constructability and ensuring the success of all projects, regardless of the project delivery method used, is early and continuous contractor and regulator involvement from concept through delivery to enable design and constructability to be considered concurrently.
 - To enhance environmental benefits and minimize environmental impacts of a project, a holistic design approach should be used that includes early and collaborative discussions between designers, construction managers and environmental regulators. The practice of sequential design reviews for environmental considerations should be replaced with over-the-shoulder reviews where environmental considerations are integrated into overall project design.

- CTDOT should use the project delivery method and contractor selection method that best fits a project's challenges and objectives to achieve potential benefits such as price certainty, constructability, reduction of overall project delivery and construction schedules, innovation, and risk transfer.
- A consultant should be engaged to guide the development and implementation of ACM processes, and for training CTDOT staff in all aspects of scoping, procurement and contracting, and management of the relationships between the CTDOT and design and construction project teams in the use of ACMs.

OVERVIEW

The report is structured in two parts. Part A covers overall project deliverability and Part B is focused on environmental review processes and permitting. Report chapters are as follows:

- Part A: Project Deliverability – Chapter 1: Literature Review; Chapter 2: Summary of State Practices from Interviews of Selected States; Chapter 3: Effective Practices – Found in the Literature; Chapter 4: Overview of CTDOT's Use of ACMs: Pilot Projects; Chapter 5: Engineering Pipeline and CTDOT Staffing; Chapter 6: Findings and Recommendations; Chapter 7: References; Appendices
- Part B: Effective Environmental Approvals and Permitting Streamlining Strategies – Chapter 1: Literature Review and Other States' Experiences; Chapter 2: Existing Environmental Review Practices in Connecticut; Chapter 3: CTDOT Environmental Permitting Process; Chapter 4: Findings; Chapter 5: Recommendations; Appendices

RECOMMENDATIONS

The recommendations are presented for Part A: Project Deliverability and Part B: Effective Environmental Approvals and Permitting Streamlining Strategies, as follows.

Part A: Project Deliverability

Generally, Connecticut's experience regarding the need to improve transportation project delivery is consistent with other states. This is evidenced by the multiple studies and efforts aimed at identifying effective practices and efficiencies for aspects of project delivery, including initiatives under the auspices of the Federal Highway Administration's *Every Day Counts* (EDC) program. Among those aspects of project delivery identified as either impediments to certainty of cost or scheduling or opportunities for improving cost or scheduling certainty are contracting methodologies, integration of utility and rights-of-way operations, and environmental reviews. Findings and recommendations regarding environmental reviews are addressed in Part B of this report.

Contracting practices have been identified as a focus area for transportation agencies seeking to deliver projects in the most efficient and expeditious manner possible. ACMs constitute "a smarter way of doing business" by bringing the collective experience and creativity of all project stakeholders to bear on a given project at the earliest opportunity. This allows state

transportation agencies to focus on maximizing cost and scheduling certainty via thoughtful solutions to typical design and construction problems. ACMs are not intended to, nor are they likely to, supplant traditional design-bid-build (DBB) as the main method of delivering transportation projects. States that have fully endorsed and implemented ACMs typically utilize them for a small percentage of their projects, but in many cases these projects are larger and consequently costlier, and thus represent a much greater percentage of a department's capital budget. It is important to identify the types of projects in which ACMs will improve scheduling and/or price certainty or solve complex or complicated issues.

A consistent lesson among all ACMs is that early contractor involvement is key to improved project delivery performance. It is also clear that certain techniques or mechanisms associated with ACMs may be incorporated for use in traditional DBB contracting and improve the performance of those projects. These may include, for example, use of an independent cost estimator (ICE) and alternative technical concepts (ATCs).

To be effective, CTDOT should consider the following three objectives in its implementation of ACMs:

- Increase the integration of the project team.
- Focus on maximizing cost and schedule certainty.
- Leverage the first two objectives to accomplish more with available capital.

Sufficient human capital in both quality and quantity must be available to implement transportation projects. Regardless of the contracting methodology, either staff or consultant services must be available and able to manage the complexities associated with projects from conception through completion.

Finally, specific performance measures or metrics and supporting data can help identify which aspects of project delivery provide the greatest opportunities for improvement. While development of a system of metrics may be resource consumptive, the data collection input and report creation need not be. In addition to providing the information base for systematic, continuous assessment and improvements, metrics can be used to support specific budgetary, legislative or policy changes that might be otherwise difficult to achieve.

ORGANIZATIONAL STRUCTURE: POLICIES AND PRACTICES FOR IMPLEMENTING AND INSTITUTIONALIZING ALTERNATIVE CONTRACTING METHODOLOGIES

CTDOT should establish a small, dedicated ACM office/unit conceptually based upon the Minnesota Department of Transportation (MnDOT) model, and others.

- The department should engage a general engineering consultant with ACM expertise to help accelerate the effectiveness of the ACM office and project success.
- To prepare for and assure that sufficient project management resources are available, the ACM office should conduct a needs assessment for the different qualities/roles

required by managerial staff for utilizing the various ACMs. As CTDOT completes the ACM pilot projects and determines the methods for project and contractor selection, the department will be able to better identify areas where specific ongoing expertise is necessary and then determine whether specialty groups within existing units should be established.

- The specific roles and responsibilities of department staff, consultants and contractors associated with various aspects of ACM development, specifications, selection and implementation should be identified and outlined in CTDOT ACM manuals.
- To institutionalize ACMs, junior level staff need to be trained and be involved in over-the-shoulder reviews with any general engineering consultants that are utilized so as to gain experience in request for qualifications (RFQ) and request for proposals (RFP) preparation, contractor selection, and management of ACMs.

Led by the new ACM office, experienced CTDOT staff should be used to guide initial ACM program development (beyond the existing pilot projects) and subsequently for review, interviewing, responding to questions, and scoring of ACM proposals. As previously suggested, a general engineering consultant should be used to supplement existing staff and to provide expertise in ACM aspects with which CTDOT has limited experience. Consultant engagement for specific aspects of ACM projects should include a “training” component to prepare CTDOT staff to transition from using consulting services to assuming responsibility for tasks internally.

- Junior staff should be exposed to all available training to both build in-house capabilities and promote organizational culture change.
- Timing the transition from use of a consultant to use of in-house staff for the procurement function should take into consideration the volume of projects and preparedness of staff to assume these responsibilities. A determination of staffing needs specifically related to ACM program development and operation should similarly take into consideration the volume of projects likely to be procured through ACMs.

PROCESS FOR SELECTING A CONTRACTING METHODOLOGY

While there is no “best” method for selecting an ACM for projects, it is recommended that CTDOT first develop a set of initial screening criteria for the types of projects that would or would not be considered for ACMs. For those projects that pass this initial threshold, a selection matrix process should be used for making the final decision. This could be the methodology developed by the University of Colorado or a modified version that best meets CTDOT requirements.

In general, for projects conducted using design-build (D-B), CTDOT will be accepting less control in exchange for the benefits of transfer of risk to the contractor, innovation, improving constructability, schedule, and price certainty. Also, the use of construction manager/general contractor (CM/GC) or construction manager-at-risk (CMAR) enables CTDOT to be at the table throughout the design process, has the benefit of early contractor involvement to improve project constructability, and can include innovative design and construction methods by having the designer, contractor, and owner working together to meet project goals and objectives.

Given the importance of selecting the “best” contract methodology to achieve a project’s goals most efficiently, it is important for senior staff to be included on the selection process team. This is especially critical since ACMs will likely be considered for the most complex and highest cost projects where innovations can have the most impact.

CONTRACTOR SELECTION

It is recommended that CTDOT follow a two-phase (RFQ and RFP) contractor selection process for D-B, CM/GC and CMAR projects. This process should include the following:

- Sufficient time for potential D-B proposers to develop teams and respond to RFQs/RFPs
- Quick and confidential responses to ATCs when used
- Stipends paid to the responsive unsuccessful proposers for D-B
- Scoring of proposals based on best value – not solely on price. Scoring formula percentages for the technical proposal/qualifications and price should be flexible, and determined on a project-to-project basis taking into consideration various factors such as project complexity and innovation. Therefore, the greater the importance of the technical proposal/qualifications for a project, the higher the percentage assigned to the technical proposal/qualifications component of the best value score.

Stipends should be calculated based on the expected level of design work needed to provide a high-quality proposal that addresses specific project objectives instead of using a simple percentage of a project’s cost. The following is an example of one method for estimating the stipend payment.

$$\text{Stipend Payment} = (\#1) * (\#2) * (\#3) * (\#4)$$

Where:

#1 = Estimated Project Cost (\$)

#2 = Average Percent Design Fee (%). (Shown as a percentage of project cost based on typical projects)

#3 = Percent of Design Required to Respond to RFP (%). This is an estimate of the percentage of the full design that the design-builder must complete to guarantee price and performance, including ATCs, if any, to meet specific project objectives

#4 = Percent of the calculated design fee [(#1)(#2)*(#3)] not including profit to respond to the RFP. For example, if typical design profit is 20% then the calculated design fee is multiplied by 80%*

For CM/GC and CMAR projects, it is critical that the designer and contractor collaborate during the pre-construction phase to achieve the benefits of these project delivery methods. While it is recommended that this relationship be stipulated in contractual agreements, it is important that the owner play an active role in facilitating this relationship.

Early contractor involvement (ECI) in project design is integral in the use of ACMs. ATCs, an aspect of ECI, are mostly used in conjunction with D-B projects to provide an opportunity to increase innovation and may lead to higher-quality projects. ECI for CM/GC and CMAR

projects is achieved through designer/contractor collaboration during the design phase of a project. Additionally, strategies to incorporate ECI into DBB should also be considered, such as use of ATCs as a component of contractor selection. CTDOT should monitor how ATCs are being incorporated into the best value selection process for CM/GC and CMAR projects, and DBB projects by other state DOTs.

HUMAN RESOURCES

CTDOT should:

- Work with the Connecticut Office of Policy and Management (OPM) to fill new and refill vacant positions to assure the capacity needed to achieve the state's transportation goals.
- Engage OPM in chartering a LEAN¹ assessment specific to CTDOT hiring and retention, recognizing that CTDOT is in a somewhat unique position relative to the competitive nature of hiring engineers, and in particular, mid-level engineers capable of quickly becoming experienced project managers.

To the extent that Conn. Gen. Stat. §4e-16 may restrict use of consultants by CTDOT for certain work efforts, CTDOT should clarify areas where use of consultants could enhance its capacity and where such use is not prevented by the statutory requirement to conduct cost-benefit analyses prior to such use, and explore with OPM proposing a legislative amendment that might lessen this constraint.

RIGHTS-OF-WAY (ROW)

CTDOT should:

- Incorporate ROW appraisal and acquisition early in project planning processes.
- Investigate with Federal Highway Administration (FHWA) and review any state limitations regarding the availability of appraisal waivers above currently authorized levels and the feasibility of having the same person conduct appraisals and acquisition negotiations under defined circumstances.
- Review its ability to hire consultants for aspects of ROW acquisition beyond appraisals.
- In consultation with the Office of the Attorney General, determine its authority to delegate ROW acquisition to design-build contractors, and if so develop protocols for such delegation.
- Through its EDC coordinator, continually monitor EDC newsletters and reports to identify innovations that enhance ROW professionals' ability to meet challenges associated with acquiring real property as may be applied to projects.

¹ LeanCT is the program within the Office of Finance, Office of Policy and Management that is responsible for the daily management and coordination of Connecticut's statewide process improvement initiative. The program assists agencies in using organizational, process and programmatic improvement techniques, such as Lean, to help create a sustainable, customer-focused, and more efficient future for Connecticut; http://www.ct.gov/opm/cwp/view.asp?a=4595&q=538306&opmNav_GID=2162

UTILITIES

CTDOT should:

- Review its Utility Accommodation Policy, if it has not already done so, to identify opportunities to address issues underlying utility asset relocation delays.
- Review the best practices identified in the Transportation Research Board's report, "Integrating the Priorities of Transportation Agencies and Utility Companies," and identify those that are implementable and valuable to its programs. Among the strategies that parallel best practices in other aspects of deliverability that should be considered are conducting design as a team, including appropriate CTDOT staff and those involved in project design on behalf of CTDOT, and utility companies; early communication with and involvement of utilities to inform decision making and avoid conflicts; and training CTDOT designers, engineers and contractors on utility relocation processes.
- Meet with and enlist the assistance of the Connecticut Public Utility Regulatory Authority (PURA) to evaluate opportunities to utilize PURA's rate-setting and operational oversight of utilities as mechanisms to set expectations for utility responsiveness to transportation project requirements.
- In its development of ACM selection processes, recognize the value of CM/GC for projects with utility issues that can affect the overall project schedule.
- Through its EDC coordinator, continually monitor EDC newsletters and reports to identify innovations that enhance its ability to meet challenges associated with relocation of utilities and other utility coordination issues.

EVALUATING PROJECT AND PROGRAM PERFORMANCE

CTDOT should establish and implement a system of performance measures that will provide the data necessary to identify with greater precision opportunities for improving all project delivery methods. It is recommended that CTDOT review FHWA's project entitled "Quantification of Cost, Benefits, and Risk Associated with Alternate Contracting Methods and Accelerated Performance Specifications" when it is published as a guide for developing a methodology for quantifying performance measures across project delivery methods.

Pinpointing lessons learned with some level of accuracy and data integrity will support ongoing process improvement initiatives throughout the department and among its partners in the public and private sectors.

While development of a system of performance measures may be resource consumptive, the data collection input and report creation need not be. Performance measures could support not only improvements in project delivery, but also provide the legislative and statewide support needed to effectively achieve the goals of *Let's GO Connecticut!* Further, it is recommended that CTDOT review Utah DOT's (UDOT) Project Development Performance Management system. While it is expected that UDOT's system may be more extensive than that which CTDOT can or should undertake initially, a review of the system will identify those measures and approaches directly related to major areas included in this study – the effectiveness of ACMs and the impediments to timely project delivery.

Part B: Effective Environmental Approvals and Permitting Streamlining Strategies

The following recommendations are applicable to all project delivery methodologies. As an overarching recommendation, each agency must rethink and change its current view of the transportation-environmental compliance relationship. For its part, CTDOT must ensure its environmental compliance paradigm incorporates environmental compliance and natural resource protection and enhancement as an integral part of design. This will require additional training and vetting of both staff and consultant engineers. It will additionally require significant integration of and communication between environmental and transportation experts, on an inter- and intra-agency basis. For DEEP's part, its management must assess its streamlining paradigms to consider its clients' (i.e., CTDOT and other major development entities) processes. In other words, DEEP needs to understand and accommodate the development sector's need for some level of authorization certainty prior to achieving the level of certainty DEEP desires and/or is required to find as a matter of final authorization.

The following recommendations offer some vehicles for implementing the above cultural and paradigm shifts, in addition to others currently being developed in detail through ongoing inter- and intra-agency efforts. In summary fashion, the recommendations all speak to (1) close and continual communication between the environmental and natural resource professionals and transportation professionals; (2) increased use of technology to assist in coordinating schedules, sharing technical information and deployment of resources; and (3) the need to establish meaningful and implementable metrics to assist in both outward public messaging and inward data collection to support maintaining or changing programs and processes.

ISSUE: PERMIT ACQUISITION WITHIN SCHEDULED TIME FRAME TO MAINTAIN ESTABLISHED PROPOSAL/BID DATES *(Initiation of multi-agency involvement; shared scheduling/project management databases; iterative feedback/input loops)*

CTDOT Engineering and the Office of Environmental Planning (OEP), in consultation with DEEP, should identify categories of projects for which OEP will provide contemporaneous, ongoing, collaborative participation with design engineers from project inception through final design. Other states and the literature have described this as "over-the-shoulder" reviews. It seems, for example, that culvert replacements are often both logistically complex from a construction perspective and an opportunity for either improving fisheries passage, maintaining the status quo or providing meaningful mitigation. It would therefore appear that as a category, these projects (or some subset of same) would benefit from such over-the-shoulder reviews so that realistic options regarding natural resources could be incorporated at an early design stage.

CTDOT should use its annual capital project plan to begin early multi-agency involvement. As in Maine, CTDOT OEP should establish and implement a preliminary screening process to identify types of projects unlikely to raise environmental or natural resource concerns (historic and cultural issues should be screened for at this level as well). Appropriate designated representatives from CTDOT Engineering/OEP and DEEP should begin discussions at project inception. Based upon an initial assessment, CTDOT Engineering and OEP should identify projects (in addition to those identified categorically per above) for which OEP will provide contemporaneous, ongoing, collaborative participation with design engineers from project inception through permit application preparation and final design. Ideally, a specific OEP staff person would be assigned to each identified project from its inception through permit acquisition. Such partnered, over-the-shoulder participation is intended to replace sequential,

iterative reviews between or among CTDOT engineers, OEP staff and DEEP. DEEP involvement should be sought and provided at any stage.

CTDOT should use shared project scheduling software so that all divisions are aware of project status/deadlines. The scheduling software should be used by DEEP as well so that they can assure involvement at appropriate times.

Beyond scheduling, CTDOT and DEEP should be able to share planning files. Electronic access to project plans and data could identify issues earlier in the design process, obviate the need for certain issues to await placement on meeting agendas, and potentially reduce the staff time involved in iterative requests and responses for information.

Agendas for both the CTDOT/DEEP Environmental Review meeting and Project Manager monthly meeting should be developed to discuss projects in which at least one representative believes there will be technical and/or scheduling challenges in acquiring environmental approvals. Criteria should be established to determine which projects are brought forth at monthly meetings. Sensitivity should be built in to the attendance lists based upon the specific project(s) challenges.

- To the extent that over-the-shoulder reviews and/or partnering between designers and OEP staff as well as shared project files are instituted, input from environmental and natural resource representatives should be sought and received as needed. Agenda items could then be reserved for more complex issues or sophisticated discussions. Similarly, projects that would still benefit from collaborative interagency review should be placed on an agenda so that project schedules can be maintained.
- Preparation of agendas should, to the extent known at the time, identify the purpose for the item's inclusion, i.e., issue(s) or questions of concern.
- For items that have been presented at prior meetings or been the subject of prior inter- or intra-agency discussions, preparation for the meeting should, as appropriate, include follow-up or documentation of resolved issues.
- Staff from the CTDOT OEP and Environmental Permit Coordination Unit (EPC) should work together with in-house and consultant designers to present projects to the regulatory agencies from both the engineering and environmental perspectives.

Any of the appropriate parties should be able to request additional items or iterative sessions.

Given the almost universal agreement regarding the value of both the CTDOT/DEEP Environmental Review Monthly meeting and Project Manager Meetings held monthly, there should be more time or additional sessions made available so that more projects can benefit. Implementation of several of the above recommendations should provide efficiencies for the individual meetings such that staff resources are not unduly affected.

Consider establishing routine training modules regarding environmental application requirements and permit authorization compliance for engineering staff, and make them available to consultants. Depending on an individual consultant's experience and/or track record, participation in training sessions may be mandated.

CTDOT project managers need to take an active role in preparation and review of presentations by consultants at monthly meetings.

CTDOT should maximize utilization of the monthly meetings – assure documentation of agreements and commitments arrived at, and incorporate documentation in permit application/documents.

ISSUE: LEVEL OF DETAIL NECESSARY TO COMPLETE PERMIT APPLICATIONS

(Clarity and alignment between engineering terminology and natural resource and environmental standards information requirements; programmatic or general permit review standards)

DEEP and CTDOT should engage in a program-specific “crosswalk” between the technical or detail information that is available and the percentage of CTDOT project design completed; this exercise should result in agreement(s) regarding the technical or detail information required for each permit type. CTDOT may consider whether its utilization of percent completion definitions can be made consistent between/among divisions.

DEEP and CTDOT should explore circumstances under which additional activities could be authorized without DEEP scrutiny and/or where certification by CTDOT engineers (internal CTDOT or consultant design) would be sufficient demonstration of environmental compliance. Stormwater may be such an area, where compliance with existing manuals sets the appropriate performance standard.

DEEP should determine and/or define which types or categories of qualified professional(s) operating at what levels would satisfy self-certification by CTDOT of its stormwater controls. To assist in this determination, CTDOT should identify for DEEP their internal staff and/or consultants that they might designate to certify that designs, operations and maintenance would satisfy environmental performance standards.

DEEP and CTDOT should establish a schedule for updating the manuals to be relied upon for establishing such performance standards.

DEEP and CTDOT should review at a granular level other states’ general permits or permits by rule (PBR) that have been identified in this report to determine whether similar practices would be acceptable and useful in Connecticut. In particular, the agencies should review: Maine’s presumption of need for projects to improve existing infrastructure; New Hampshire’s presumption of need for certain transportation projects; Maine and New Hampshire’s use of simplified forms and filings for transportation projects; Washington State’s programmatic permits for bridge structure repair, painting, and washing; channel, fishway, and culvert maintenance; and culvert replacement in non-fish bearing streams.

CTDOT and DEEP should continue discussions and formalize an approach to authorizing a maximum footprint of impact to wetlands. (This may require a legislative presumption of need for certain classes of transportation projects.) Also see the recommendation regarding mitigation programs that follows.

ISSUE: SUBSTANTIVE ISSUES WITH RECURRING, MULTIPLE, SCHEDULE CHALLENGING ITERATIONS (*Fisheries and wildlife impacts and mitigation; wetlands mitigation; emerging issues*)

With appropriate sensitivities built in to the agenda setting process, DEEP fisheries and wildlife staff should be asked, and at times be required, to attend monthly meetings.

DEEP should reevaluate its existing Stream Crossing Guidelines and update them as necessary. The guidelines should be sufficiently specific so that CTDOT can proactively incorporate such specifications or performance standards in its designs and/or design specifications or mitigation plans.

CTDOT should proactively incorporate fish passage and stream crossings or mitigation into its design plans to address impacts to these.

CTDOT should consider hiring fisheries biologist(s) or having such experts “on-call” to consult on specific projects. DEEP should consider the definition of “qualified professionals” who would certify reviews or designs.

DEEP and CTDOT, with the assistance of the Office of the Attorney General, should develop and seek a legislative amendment to provide for mitigation in-lieu fee and banking programs.

DEEP and CTDOT should design and develop a watershed-based habitat mitigation and banking program.

To the extent not already accomplished, the CTDOT/DEEP Working Group should be formally established. In addition to its current practice of addressing ongoing, identified issues, it should be used as necessary to update attendees on emerging issues and inform them of opportunities to participate in addressing such issues.

ISSUE: ASSURING CONTINUOUS PROCESS IMPROVEMENT AND GEARING UP FOR A LARGER CAPITAL BUDGET AND MEGA PROJECTS (*Staffing levels; metrics; Every Day Counts*)

CTDOT and DEEP should jointly work with OPM to refill vacant positions to assure the capacity needed to achieve the state’s transportation goals.²

CTDOT and DEEP should revisit CTDOT’s past proposals to fund positions at DEEP, identify needs within specific permitting programs and establish accountability and performance standards should positions be funded. The agencies should evaluate whether the current system of having CTDOT provide funds and the project codes for DEEP staff to utilize, as opposed to funding specific staff positions, is still viable. DEEP should evaluate with OPM whether it would be able to add specific FTEs on the basis of CTDOT funding, and reevaluate its current accounting and documentation system for utilization of CTDOT funds.

² The authors fully recognize the state’s current budget circumstances. However, long-term transportation goals and interests will be challenged at best and jeopardized at worst should the staff necessary to develop and implement transportation projects not be available.

Management at the highest appropriate level at CTDOT and DEEP should jointly discuss with OPM any impediments to and mechanisms to overcome CTDOT payment for DEEP services and payment of overtime to bridge the 35- to 40-hour workday difference for DEEP employees.

To the extent that Conn. Gen. Stat. §4e-16 may restrict use of consultants by CTDOT for certain environmental review-related work efforts, CTDOT should clarify areas where use of consultants could enhance environmental review capacity and is not prevented by the statutory requirement to conduct cost-benefit analyses prior to such use, and explore a legislative amendment that might lessen this constraint.

CTDOT and DEEP should establish and institutionalize a SWAT team approach to mega projects. Appropriate staff from each agency should be designated and delegated necessary authorities to make commitments from project inception through construction.

CTDOT should establish and implement a system of performance metrics, ideally in conjunction and consistent with its project scheduling and plan sharing systems, that will provide the data necessary to identify opportunities for environmental review streamlining with greater precision.

CTDOT should, in consultation with DEEP, identify corridors likely to be impacted by transportation projects and review and address natural resource data gaps.

CTDOT should ensure that it is poised to take advantage of any and all FAST Act and EDC opportunities including new or modified programmatic agreements between or among federal and state highway, environmental, natural and cultural and social resource agencies. Also, OEP should establish regular status updates with the CTDOT EDC Coordinator to identify new initiatives that may enhance environmental review coordination and/or synchronization.