



# Literature Search Need Statement 554

**Date:** April 5, 2018

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**Resources searched:** TRID, RiP, Internet, Library Catalog

**Summary:** This search was limited to the years 2013-2018, as requested by Nicole. *Please note that the titles are hyperlinked to the full document.* The articles I have included are about specific uses of incentives. I was able to find no references that exactly address the question, “Are Construction Incentives Working?” A search of the Internet revealed nothing related to engineering construction projects. All the articles were related to the use of energy conservation to lower costs.

**1. Synthesis of Information Related to Highway Problems. Topic 47-09. Effective Practices for Establishing Contract Completion Dates for Highway Projects**

**Sponsored by:** FHWA.

**Abstract:** State Departments of Transportation (DOT) use various methods to set contract completion dates for highway projects. The objective of this synthesis is to document the methodologies used by DOTs to determine completion dates for different types of contracts. Information gathered for the synthesis will include the following: ... 4) DOT experience with Incentives/Disincentives or Disincentives Only; ... Information for this study will be gathered through literature review, a survey of state DOTs, and follow-up interviews with agencies for case examples of their practices.

**2. Design-Build Stipends and Their Impact on Highway Project Innovation**

**Source:** Transportation Research Board, 2018

**Abstract:** This paper investigates four aspects of stipends: (1) stipend value and calculation processes; (2) impact on a contractor’s decision to propose; (3) impact of stipend amount on an offeror’s proposal development, and (4) stipends’ ability to aid agencies in achieving best value for highway construction projects. All sources agree that stipends are a necessary process to achieve best value as they increase competition and often can increase the quality of a proposal based on the stipend amount. Stipends typically cover one-third to one-half of a contractor’s proposal costs.

**3. Quantifying the Impact of I/D Contracting on the Time/Cost Trade-Off for Pavement Rehabilitation Projects**

**Source:** American Society of Civil Engineers, 2016

**Abstract:** Therefore, alternative contracting methods that are aimed at reducing highway projects’ durations, such as the incentive/disincentive (I/D) method, are gaining popularity among SHAs (State Highway Agencies). For instance, the value of the ID assigned in a highway project has a significant effect on expediting the completion of the project while saving tax dollars. However, the current practice of estimating and assigning the ID value is not adequate and is frequently either overestimated or underestimated. This paper presents the development of a new model to accurately estimate ID value in highway rehabilitation projects based on the desired level of duration reduction.

**4. Impact of I/D Contracts Used for Expediting Michigan’s Road Construction**

**Source:** Michigan DOT, 2015

**Abstract:** The Michigan DOT (MDOT) has been using monetary incentive/disincentive (I/D) payments/penalties to accelerate highway construction work. This paper examines whether the I/D for expediting construction captures the true cost (user delay savings versus actual I/D dollars) and identifies its impacts on the long-term pavement performance for projects that have been expedited. Data were collected and analyzed on projects built through acceleration techniques and similar projects, constructed under standard contract means from 1998 to 2012. The analyzed data statistically supports an improvement in the long-term project performance for incentive projects



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and suggests a trend that incentive clauses accelerate project schedules. Additionally, data analysis statistically supports the concept that incentive clauses increase project cost yet further analysis finds that the avoided user delay was higher than the additional paid cost for some incentive clauses.

5. **Decision-Support Framework for Quantifying the Most Economical Incentive/Disincentive Dollar Amounts for Critical Highway Pavement Rehabilitation Projects**

**Source:** Texas A&M, 2013

**Abstract:** One innovative way of reducing construction duration is to reward contractors with an early completion incentive bonus and levy fines for delays. Although use of Incentive/Disincentive (I/D) is increasingly common, State Transportation Agencies (STAs) often struggle to select the most appropriate I/D rates due largely to the lack of proper analytical methods. There is an immediate need to develop a holistic framework that is more general and applicable to a variety of transportation projects for the determination of optimal I/D rates. The main objectives of this study are to create a new decision-support analytical framework of optimal I/D and test whether it can reasonably and realistically determine and justify the most economical I/D dollar amounts.